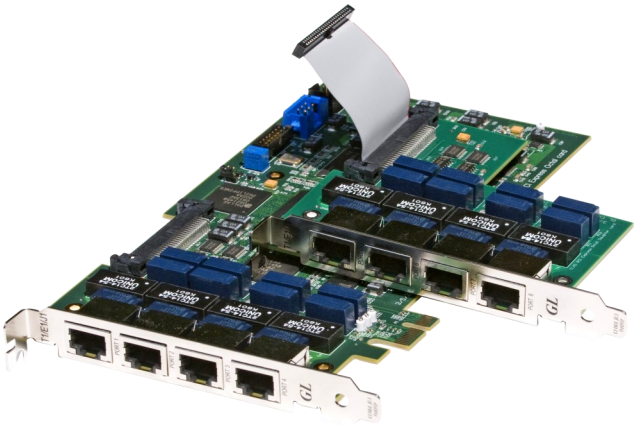
T1 E1 TESTERS

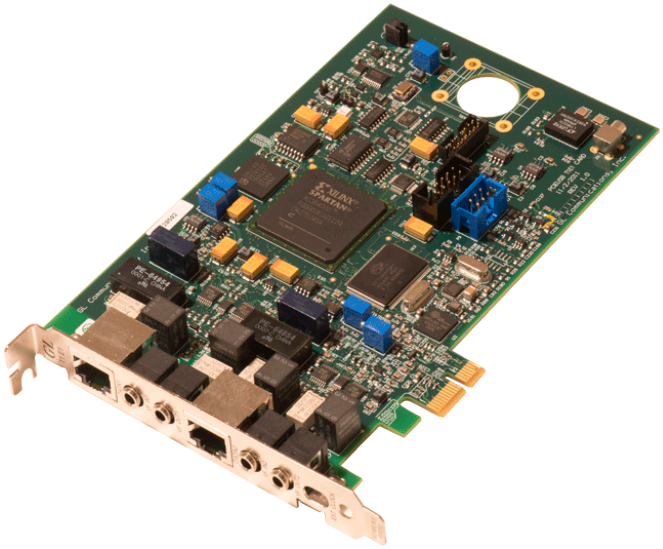
Back Panel

Front Panel

USB Based T1 E1 VF FXO FXS and Serial Datacom Analyzer Unit



PCIe Based Octal and Quad T1 E1 Boards



Dual T1 E1 PCIe Express Card

Front Panel

Back Panel

tScan16™ High-Density T1 E1 Board

GL Communications Inc.

818 West Diamond Avenue - Third Floor, Gaithersburg, MD 20878, U.S.A

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T1 E1 Analyzers

(Available in two form-factors – PCI Boards or USB-based portable units)

Overview

T1 E1 carriers are used extensively throughout the world for carrying large volumes of call containing both voice and data. Their popularity can be attributed to their high reliability, manageability and flexibility. The available digitized channels, 24 for T1 and 32 for E1 can be used for carrying voice and/or data. Regardless of the form-factor you choose, GL's T1 E1 Analyzers provide a wide range of functionalities and testing capabilities.

GL's tScan16™ is a high-density T1 E1 board with 16 ports and the newer PCIe (x1) bus interface. The sixteen T1 E1 ports are **Receive-only** ports optimized for high performance voice and data capture, monitoring, and analysis requirements. GL's Octal & Quad T1 E1 Analyzer Boards are high-density boards that provide Four (4) or Eight (8) RJ-48 T1 E1 ports and multiples thereof. With this, configurations of 8, 12, 16, … 64 T1 E1s in a single rack are possible. It's designed for the newer PCIe lanes for faster processing and scalability.

The USB-based tProbe™ T1 E1 VF and Serial Data Analyzer units add new functionality and features not available with the "portable" T1 E1 USB-based Analyzer. The enhanced features and capabilities include pulse mask and jitter measurement and analysis, cross-port through and transmit modes, enhanced VF drop and insert capabilities. GL's tProbe™ also includes ability to add optional boards such as the tProbe™ Datacom Analyzer , and tProbe™ FXO-FXS Board.

GL's new Dual T1 E1 Express (PCIe) Cards are high-density boards with newer PCIe bus interface. These cards are identical to the portable tProbe™ units, except for FXO FXS and Datacom functionality. Visit T1 E1 Testing for more details.

Main Features

- Software Selectable T1 or E1 interfacing along with Drop and Insert
- Ability to monitor Power, Frequency, Signaling, Binary Byte Values, and DC Offset
- Monitor the T1 E1 line conditions such as frame errors, violations, alarms, frequency, power level, and clock (or frame/bit) slips
- Time and spectral graphical views of any channel or timeslot can be monitored
- Internal speaker for DS0 Monitoring, Data, Four Wire VF-Interface, Drop and Insertion of Analog and Digital Signals, Real-time Monitor and Time-Stamped Log of all alarms and abnormal events
- Comprehensive Analysis / Emulation of Voice, Data, Fax, Protocol, Analog, and Digital signals, including Echo and Voice Quality testing
- Call Recording, Generation, & Monitoring hundreds to thousands of calls in one platform
- Supports pulse mask compliance testing, jitter generation, and analysis
- Precision Delay Measurement, Unframed/Framed, Transmit/Receive Tone and signaling bits at user-defined frequency and power in one (or all) channels, and Tx/Rx loopback applications are provided for intrusive testing
- Supports Full/Fractional T1 E1 Bit Error Rate Testing with detailed logging
- Routing and Bridging emulation over Multi T1 E1 WAN interfaces using MLPPP (Multi Link PPP) and MFR (Multi Link Frame relay) protocols
- DTE-DCE Simulation to test and verify data communications equipment and circuits – specifically serial interfaces V.24, V.35, V.36, RS-449, RS-485, EIA-530 and EIA-530A interfaces
- Compatible with Windows® 10 operating systems and user friendly real-time software

For more details, visit T1 E1 Applications webpage.

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T1 E1 Basic Applications

- Framing Formats
- Tx Rx Configurations
- Clock options: Internal, External, & Recovered
- Loop-backs: Framer, Driver, & Remote-loopback
- Connection Options: Terminate, Bridge, Monitor
- Cross-port Through and Transmit Mode

Monitor Applications

- Monitor T1 E1 Line Status
- Monitoring VF Interfaces
  - VF Input/Output Interfaces for T1 E1 Products
  - 4-Wire VF Interface with Drop & Insert
- Bytes Values Display for all time slots
- Binary Byte Values Display for all time slots
- Monitor signaling bits
- Power Level Display for all time slots
- DC Offset Display for all time slots
- Frequency Display for all time slots
- Multiframe Byte Display
- Real Time Multiframe Monitoring
- Real Time Bitmap Monitoring
- Time Slot Byte Display
- ASCII Timeslot Display
- Signaling Transitions Recording
- Real Time Oscilloscope Display of DS0
- Real Time Power Spectral Display of DS0
- Real-time strip chart software
- Active Voice Level Monitoring
- Pulse Mask Compliance Testing
- Jitter Measurement
- Physical Layer Analysis
- Audio Monitoring
- Real-time Multi-Channel Audio Bridge
- Capture Dial Digits

Intrusive Applications

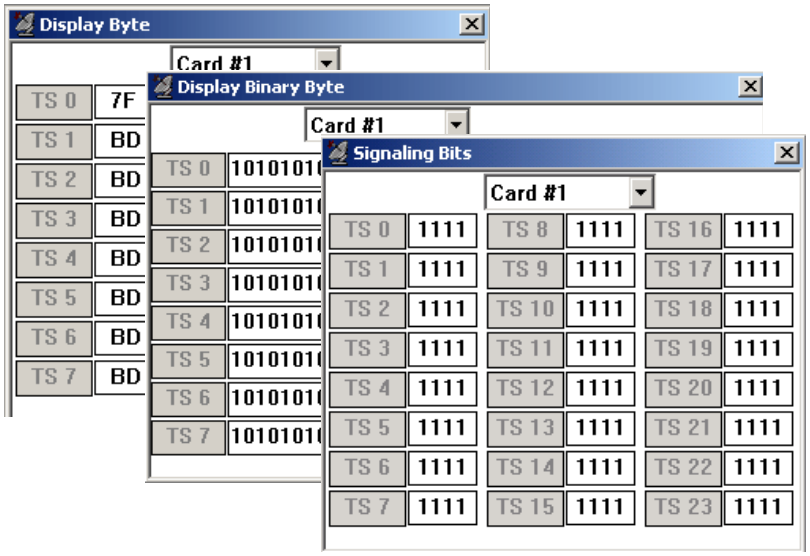
- Bit Error Rate Test
- Enhanced BERT
- ATM BERT
- Transmit Tone
- Transmit Gaussian Noise
- Transmit Multiframe
- Transmit Signaling Bits
- Precision Delay Measurement
- Rx-to-Tx-Loopback
- Error Insertion
- Precision Loopback, Broadcast
- 23 Test Tone Director (Tx) and Responder (Tx)
- Software Delay Measurement

Monitoring Applications

Multiple applications are offered to monitor information received over T1 E1 lines. They cover information such as **Byte Values**, **Binary Byte Values**, **DC Offset**, **Timeslot Displays, ASCII Timeslot Display**. **Oscilloscope**, **Power Spectral**, **Audio Monitoring**, and **Active Voice Level**. **Oscilloscope** and **Spectral Displays** provide graphical analysis of signals. The T1 (E1) analyzer emulates and decodes all 24 (32) channels simultaneously for **Signaling Bits**, **Power Level**, **Frequency**, and **Multi-Frame** data. **VF Interface** for monitoring and inserting audio with Drop and Insert are also provided.

Monitor Byte, Binary Byte, and Signaling Bits

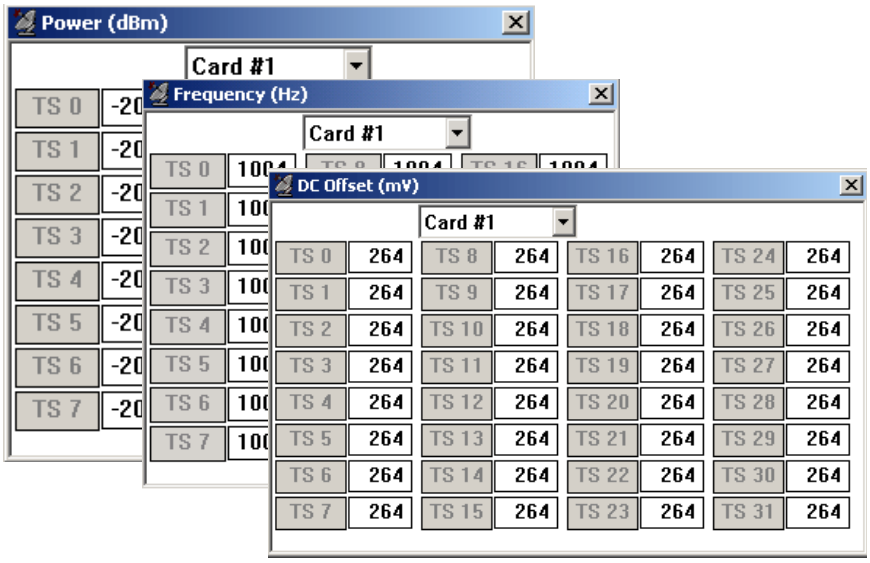
Displays the data values for each time slot in HEX and binary data format. Signaling bits associated with each timeslot are displayed in real-time



Monitor Byte, Binary Byte, and Signaling Bits

Power Level, Frequency, and DC Offset

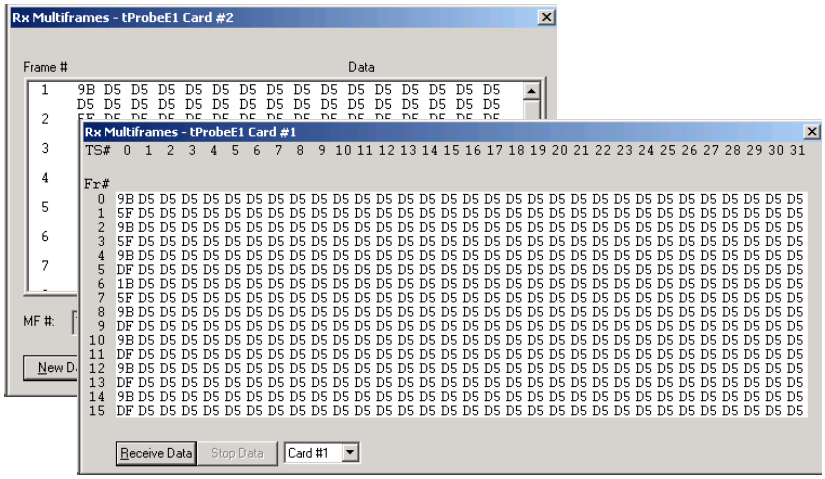
In Power Level for each timeslot is computed and continuously displayed in dBm. In frequency, a continuous display of the signal frequency in each timeslot is displayed. The DC Offset provides the capability to measure and display DC offsets for all timeslots.



Power Level, Frequency, and DC Offset

Multi-frames and Real-time Multi-frames

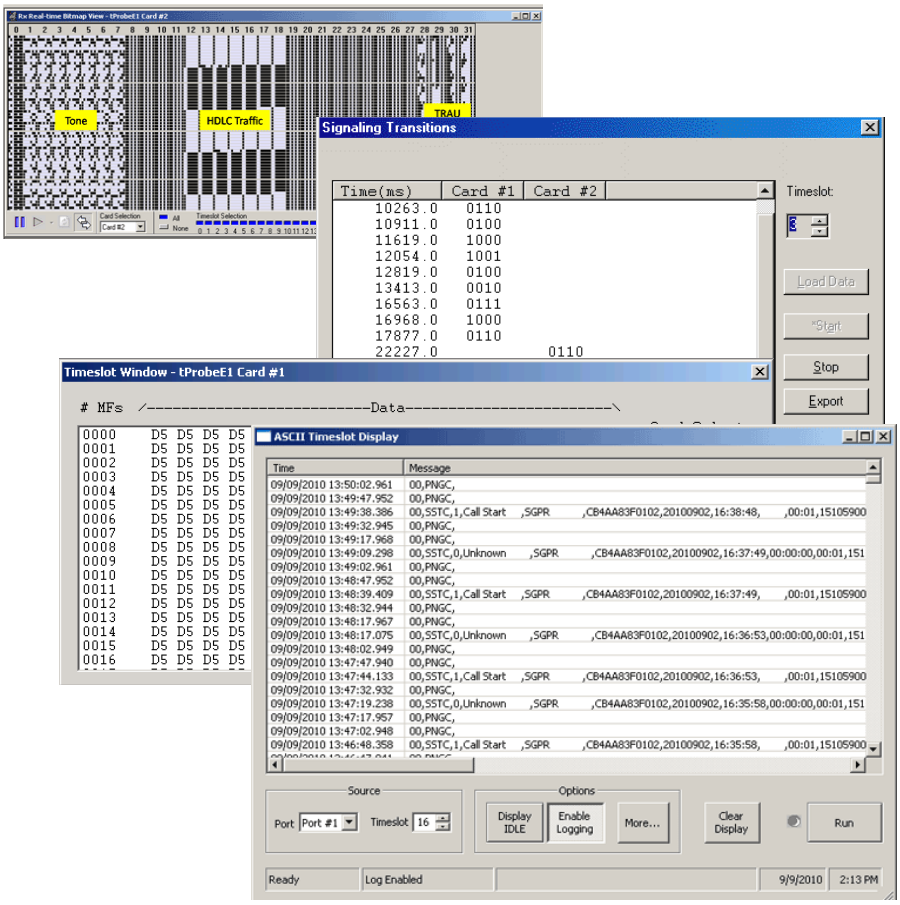
This application permits monitoring of multiframes for all timeslots and permits viewing of multi-frames in real-time.



Monitor Multiframes and Realtime Multiframes

Realtime Bitmap, Timeslot, ASCII Timeslot, Signaling Transitions

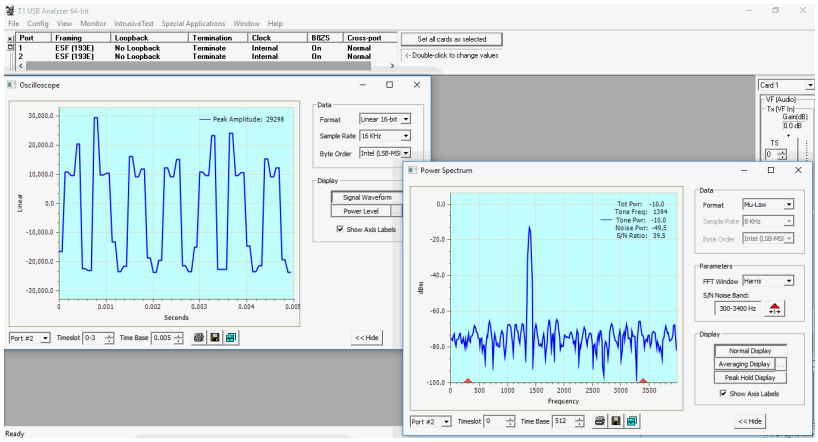
The Realtime Bitmap permits a graphical view of complete multi-frames. Timeslot window displays the timeslot value for about '2' second duration for a desired timeslot. ASCII Timeslot application permits viewing of real-time ASCII events that are present on the T1 or E1. The **Signaling Transitions** application display records of all signaling bit changes along with the time-stamped indications for each bit.



Bitmap, Timeslot, ASCII Timeslot, Signaling Transitions

Oscilloscope and Spectral Display

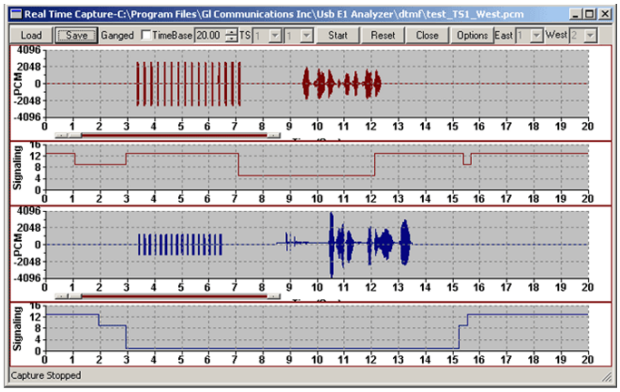
The linear codes and the data received on a specified timeslot can be viewed in the Oscilloscope and spectral domain.



Monitoring Applications

Real-time Strip Chart (XX024 Included with Basic Analyzer)

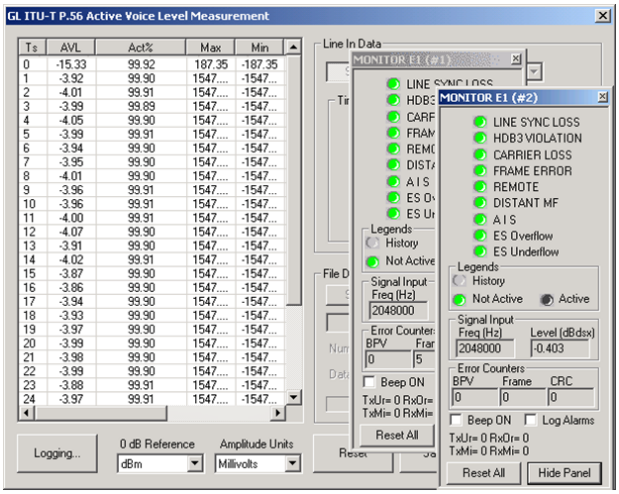
This application is used for analysis of CAS signaling, non-intrusive capturing of PCM data and signaling, and subsequent plotting of the same onto a strip chart format.



Real-time Strip Chart

Active Voice level

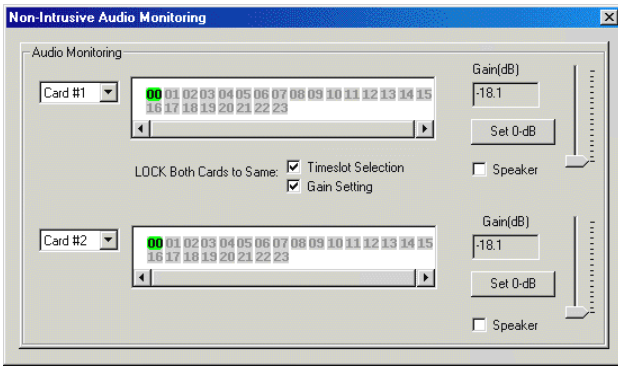
This application computes the active voice level of a signal according to the ITU-T P.56 specification. Users can obtain and analyze the source signal in real-time or can process signal data captured to files as an offline process.



Active Voice Level and Monitoring Cards

Audio Monitoring

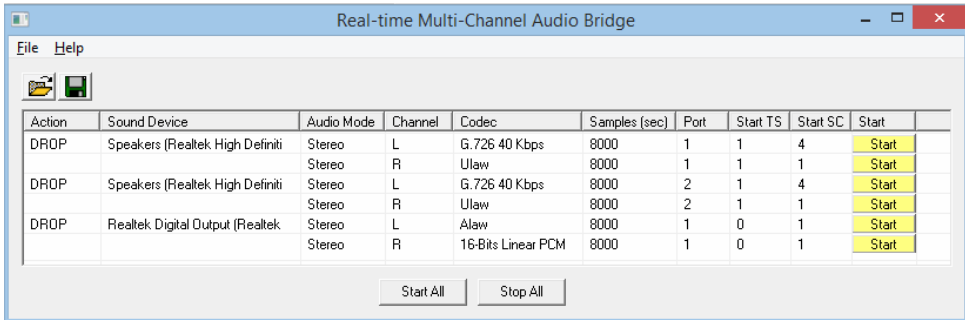
This application is used for analysis of CAS signaling, non-intrusive capturing of PCM data and signaling, and subsequent plotting of the same onto a strip chart format.



Audio Monitoring

Real-time Multi-Channel Audio Bridge (XX017 Included with Basic Analyzer)

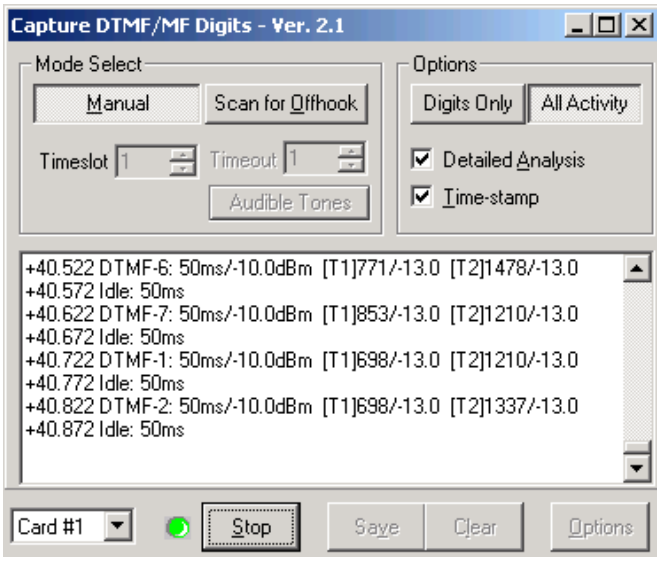
This ingenious software allows sound aware applications such as Goldwave, Matlab, Adobe Audition, Cool Edit, Audacity, and others to send and receive data to / from a T1 E1 timeslot or VF channel. It also sound card input to be connected to a timeslot.



Real-time Multi-Channel Audio Bridge

Capture DTMF/MF (MFR2-F, MFR2-B) Digits (XX022 Included with Basic Analyzer)

The capture application includes Manual and Scan for offhook modes. In manual mode, the capture operation simply stays on the selected time slot, displaying the digits received. In scan for offhook mode, the scanning of successive time slots takes place; detection of an onhook to offhook transition at a time slot would mark the beginning of the capture activity.



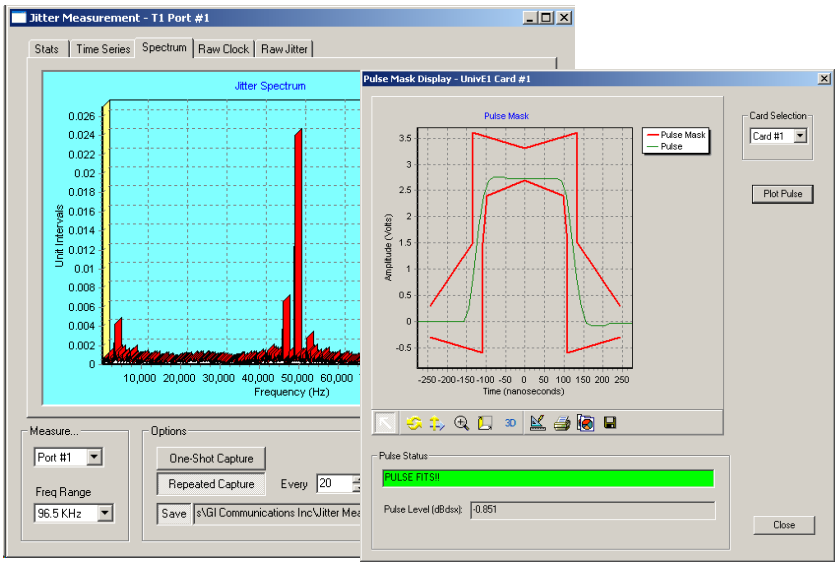
Realtime Multi-Channel Audio Bridge

Jitter and Pulse Mask Measurement XX012 Included with Basic Analyzer)

Pulse shape measurement software has been developed to determine if the pulse shape fits within a “pulse mask” as specified by standards ITU G.703 and ANSI T1.102-1993. The software is available in both visual and tabular formats. Tabular formats are convenient for automation and scripted test environments. Pulse Mask image can be saved to a file.

Jitter Measurement software allows one to accurately measure jitter associated with T1 or E1 signals. It also allows evaluation of the jitter on either a tick-by-tick or a cumulative basis.

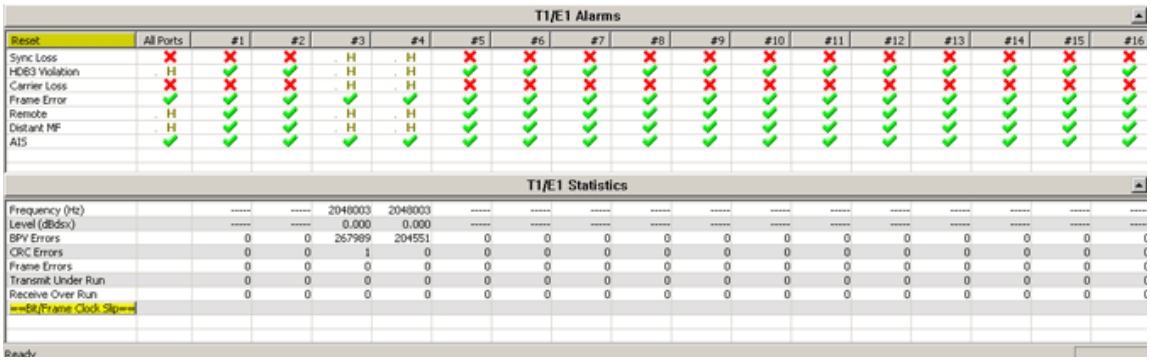
The application recognizes the following groupings of clock deviations – Drift (Very slow variations in a clock signal (below 1 Hz), and Frequency Deviation (A permanent or steady-state difference in clock rates.



Jitter Measurement, and Pulse Shape

Monitor T1 E1 Lines

Provides a detail description of all alarms and line conditions in the ‘Monitor’ panel for all the available T1 E1 Cards installed on local PC.

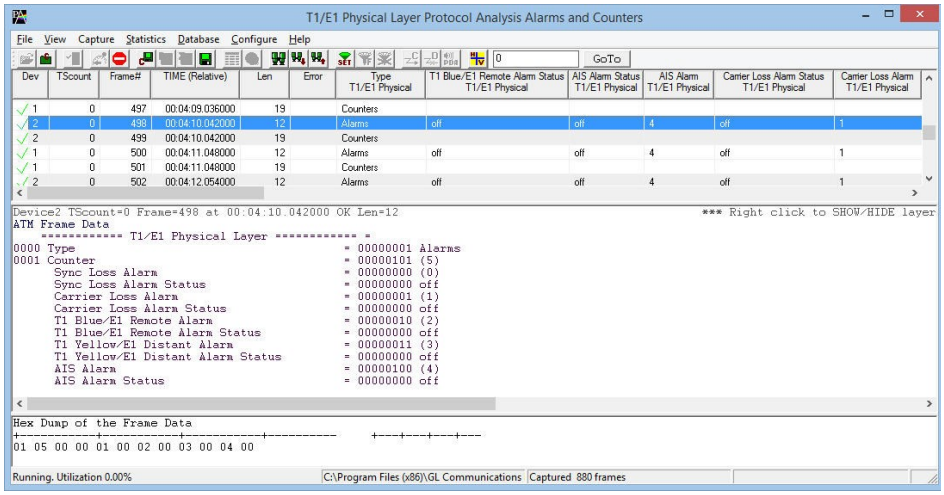


Monitoring T1 E1 Lines

Physical Layer Analysis

Used to monitor T1 E1 and T3 E3 line alarms. Helps to track the time at which alarms (T1 Alarms) occurred periodically and send this information to the central database over TCP/IP. GL's NetSurveryorWeb™ can fetch these records from the central database and allows centralized monitoring of physical layer status of T1 E1 line via simple web based clients.

Further, alarms monitored at the DS3 level and at the DS1 level can also be packetized and sent via SNMP to the network operation centers.

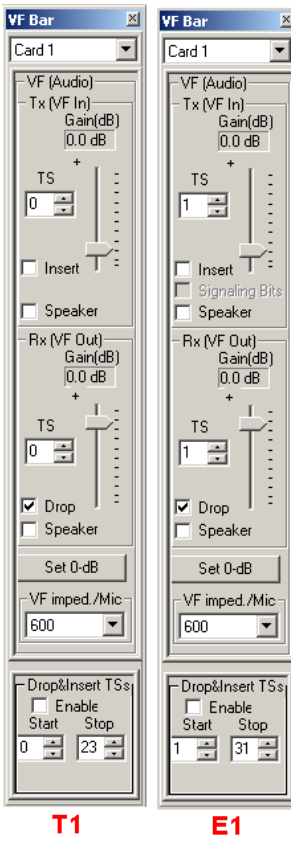


T1 E1 Physical Layer Analysis

VF Options

When "Drop" option is enabled, the signal on the selected timeslot is dropped on to the VF Out port on the selected port.

When the "Insert" option is enabled, the incoming VF signal from the selected port is inserted to the selected timeslot.



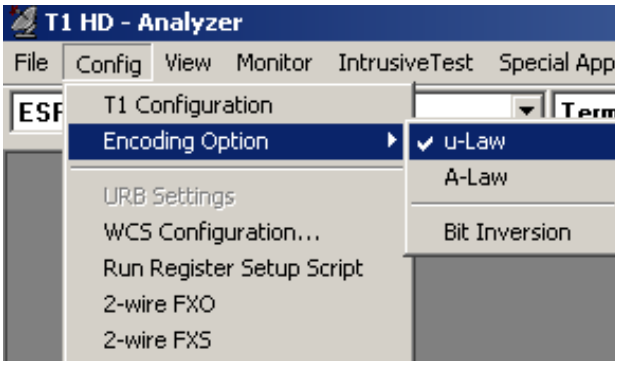
VF Dialog Bar

Configuration

Configuration functionality provides various options to configure the Tx/Rx parameters of the low level chip functions for dual T1/ E1 framers and drivers. The **Encoding Option** in T1 E1 Analyzer software permits encoding and decoding using either a-law or u-law formats.

T1 E1 Encoding (XX023 Included with Basic Analyzer)

The companding (A and µ) laws are used for Audio level compression, which is used for many purposes. The mu-law algorithm (µ-law) is a companding algorithm, primarily used in the digital telecommunication systems of North America and Japan. An a-law algorithm is a standard companding algorithm, used in European digital communications systems.

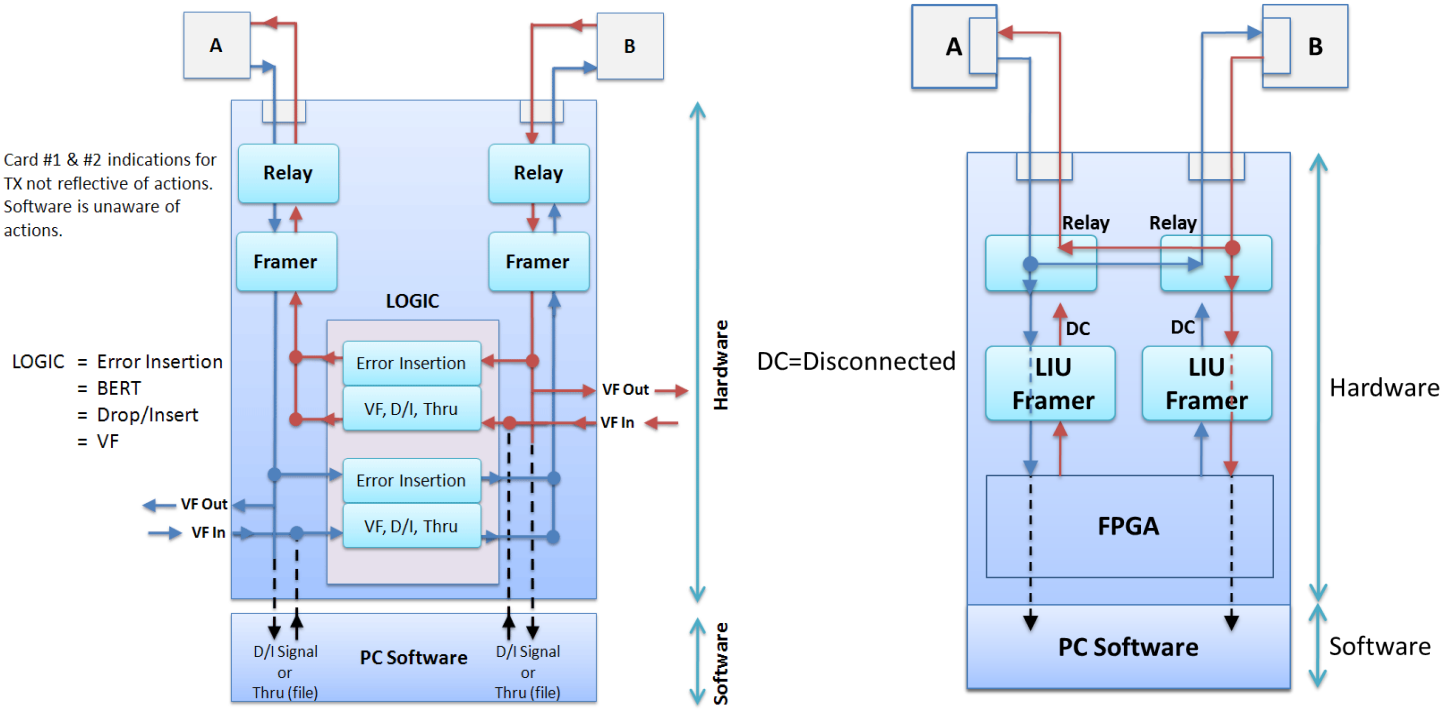


Encoding Options

Cross Port Transmit and Through Mode

In cross-port transmit mode, the data that would normally be transmitted on Card 1 (Port 1) is diverted and transmitted on Card 2 (Port 2) and the data that would normally be transmitted on Card 2 (Port 2) is diverted and transmitted on Card 1 (Port 1). The receive paths are completely unaffected. This feature also eliminates complex cabling.

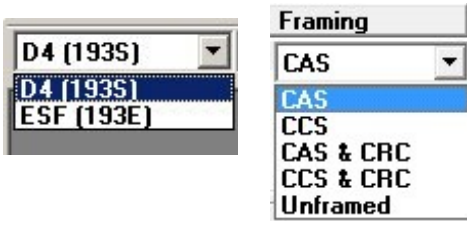
In cross-port through mode data is passed thru seamlessly and monitored simultaneously. It acts like outward loopback on the different port. Signal received on port 1 is transmitted out on thru port 2 and vice versa. Irrespective of the interface setting (Terminate, Monitor, Bridge), data is passed thru. Connection is not disrupted even if the PC looses power.



Cross Port Transmit and Through Mode

Framing Formats for T1 E1 Systems

Provides options to select D4, ESF, CAS, CCS, CAS & CRC, CCS & CRC, and Unframed T1 E1 framing formats.

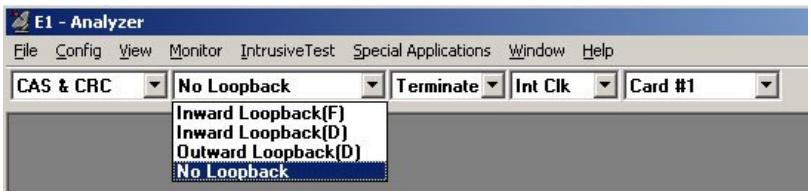


T1 and E1 Framing Format

Loopbacks

Three separate hardware loopbacks are provided on the T1 E1 Cards:

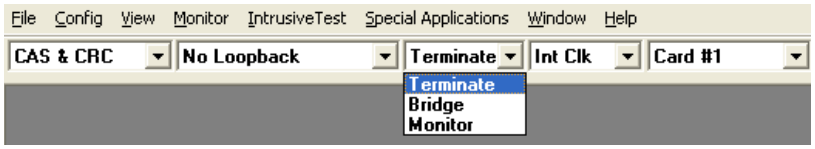
- Inward framer loopback (Inward Loopback (F))
- Inward driver loopback (Inward Loopback (D))
- Outward driver loopback (Outward Loopback (D))
- An additional software loopback called "Rx-to-Tx Loopback" is also provided. In software loopback, the received data is looped back to transmit data by the PC software



Loopback Settings

Terminate, Bridge, and Monitor Modes

The T1 E1 input signal may be terminated using impedance, monitored, or bridged depending on user requirements.

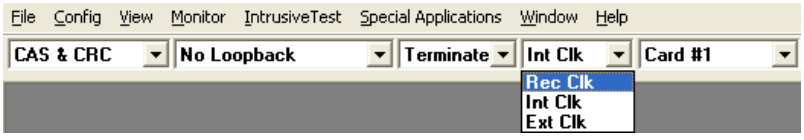


Connection Options

Clock Options

The T1 E1 analyzer has 3 clock options to choose.

- Internal Clk
- Recovered Clk
- External Clk

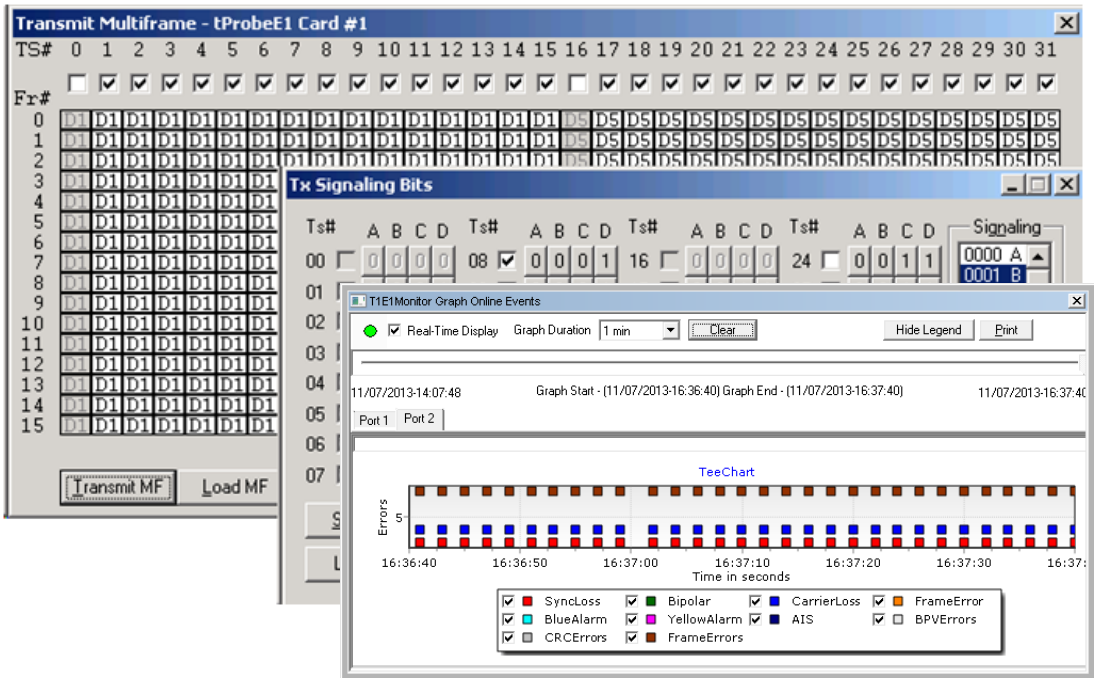


Clock Options

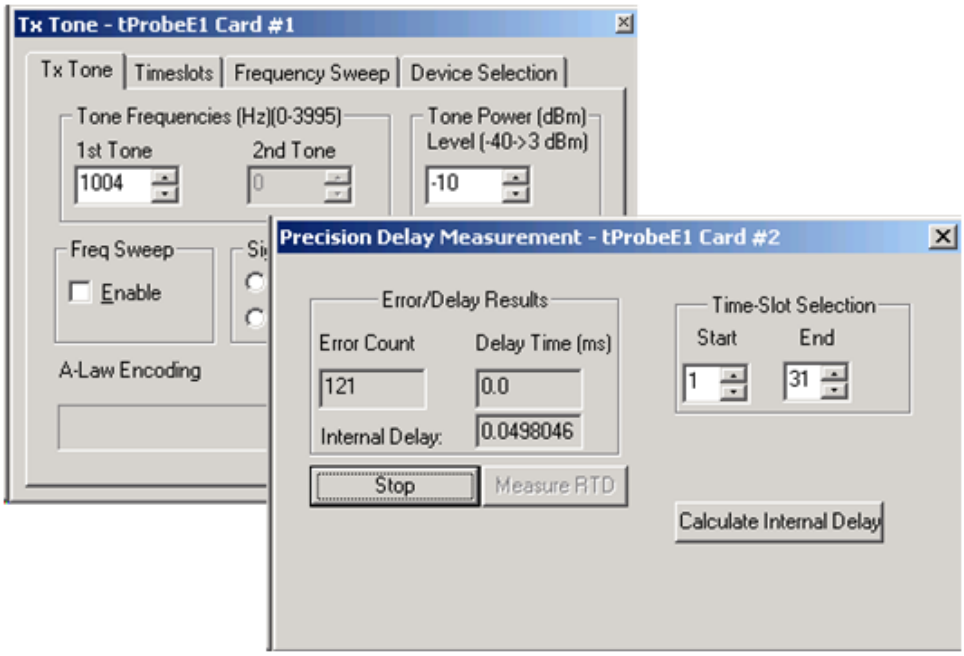
Intrusive Test Applications

The analyzers use a variety of intrusive testing applications to verify the working of T1 E1 lines. The Basic and Enhanced **BER Testers** generate / detect framed, unframed, fractional, and sub-channel BER patterns with 16 different static patterns. Enhanced BERT also offers online / offline views of events through a powerful graphic viewer. **ATM Bit Error Rate Test** (BERT) application permits BER testing over the ATM layer. **Precision Delay Measurement** measures the round trip delay of a system with accuracy at the microsecond level. **Tone / Multiframe / Noise** generation and detection, **Signaling Bits** manipulation and recording, including error insertion features, provide complete signaling ability for the T1 E1 Analyzers. The **Error Insertion** application permits single, fixed, automatic, and random error insertion into the incoming bit stream, including Bulk Delay feature .

Note: Bulk delay for error insertion is not available on Octal/Quad T1 /E1 Analyzers.



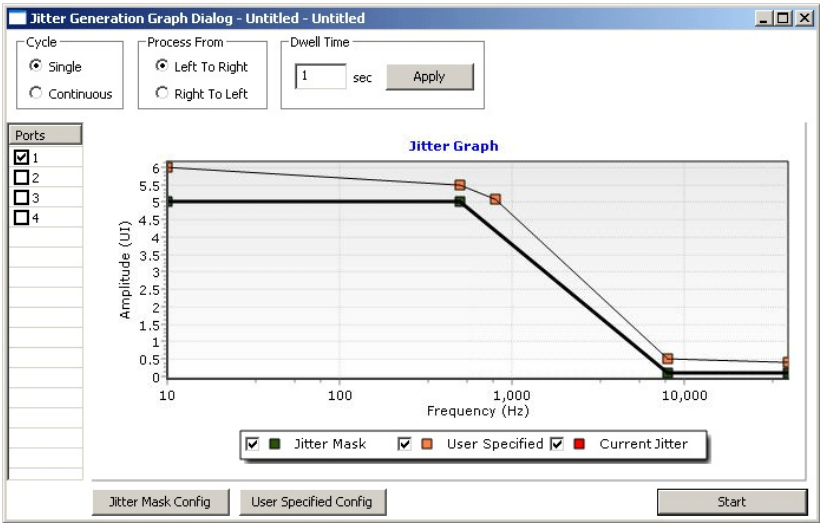
Transmit Multiframe, Transmit Signaling Bits



Transmit Tone and Precision Delay Measurement

Jitter Generation (XX012 Included with Basic Analyzer)

Jitter Generation generates jitter based on user defined frequency module and amplitude values.

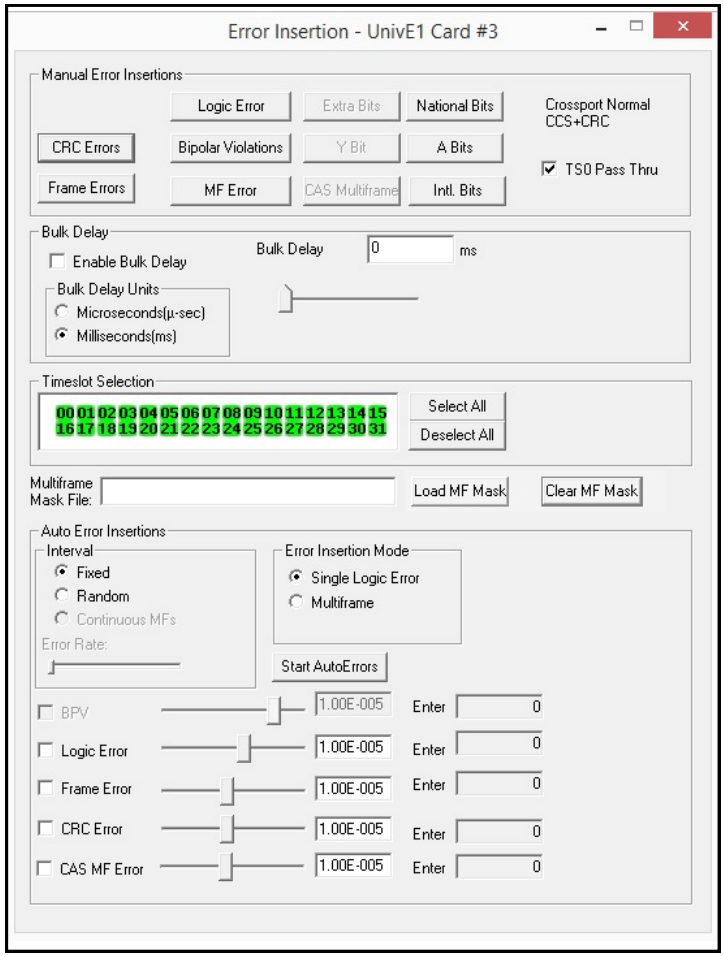


Jitter Generation

Error Insertion

The Error Insertion application permits inserting single, fixed, automatic, random, and burst error into the incoming bit stream.

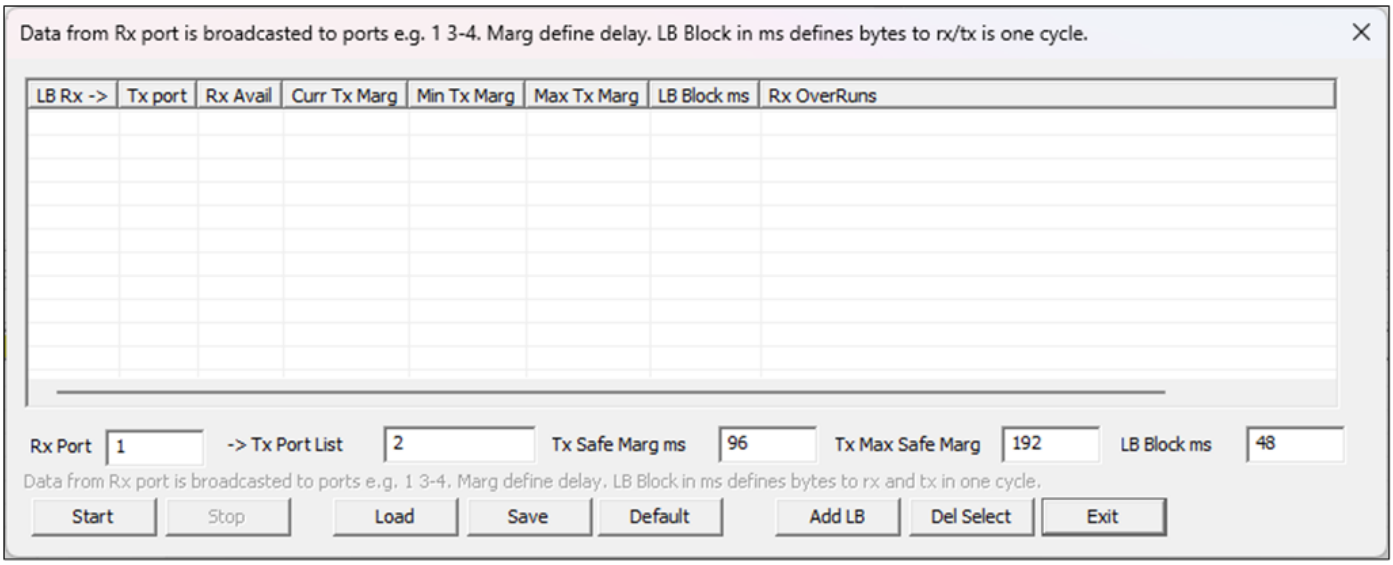
The application allows to manually insert CRC, Framing, International bits, National bits, A Bits, CAS Multi-frame, Logic Error, and Bipolar Violations.



Error Insertion

Precision Loopback, Broadcast

The Precision Loopback and Broadcast interface is used to broadcast data from a selected Rx port to multiple Tx ports. It allows users to define timing margins, block sizes, and safe margins to ensure precise loopback and data transmission. Also, helps in monitoring parameters such as transmission delays, data availability, and overrun conditions.

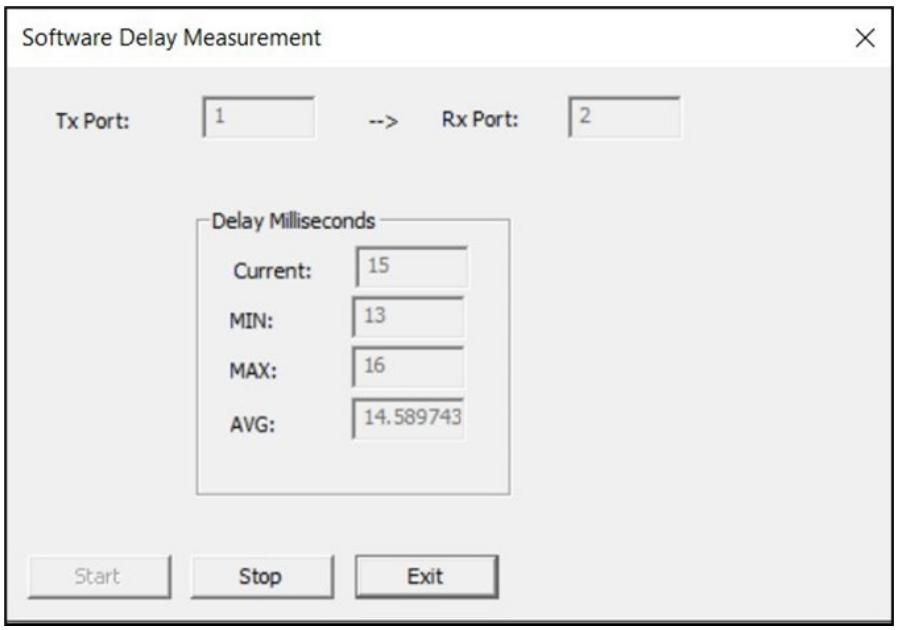


Precision Loopback, Broadcast

Software Delay Measurement

The Software Delay Measurement utility operates in both hardware-based and software-based T1 E1 analyzers. It accurately measures delay using the computer's precise timing by tracking a byte mark in the global buffer of a specified Tx port and monitoring when it appears in the Rx global buffer of a specified Rx port.

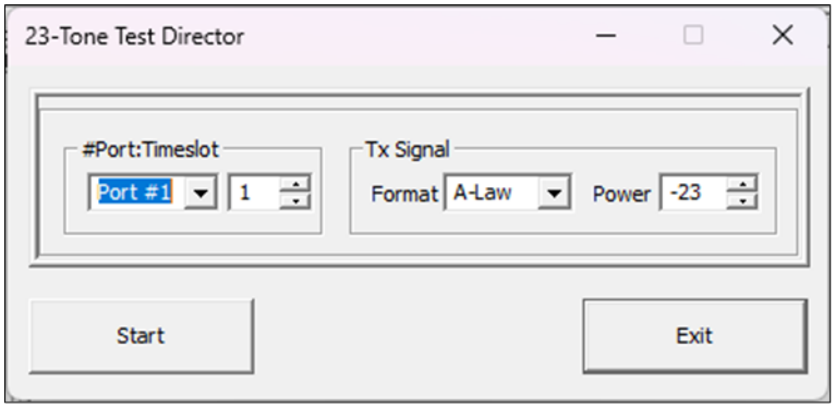
- The maximum measurable delay is limited to twice the global buffer size (2 seconds max).
- The tool ensures precise approximation of the transmission time by adjusting the measurement dynamically.



23-Tone Test - Director (Tx)

23-Tone Test - Director (Tx)

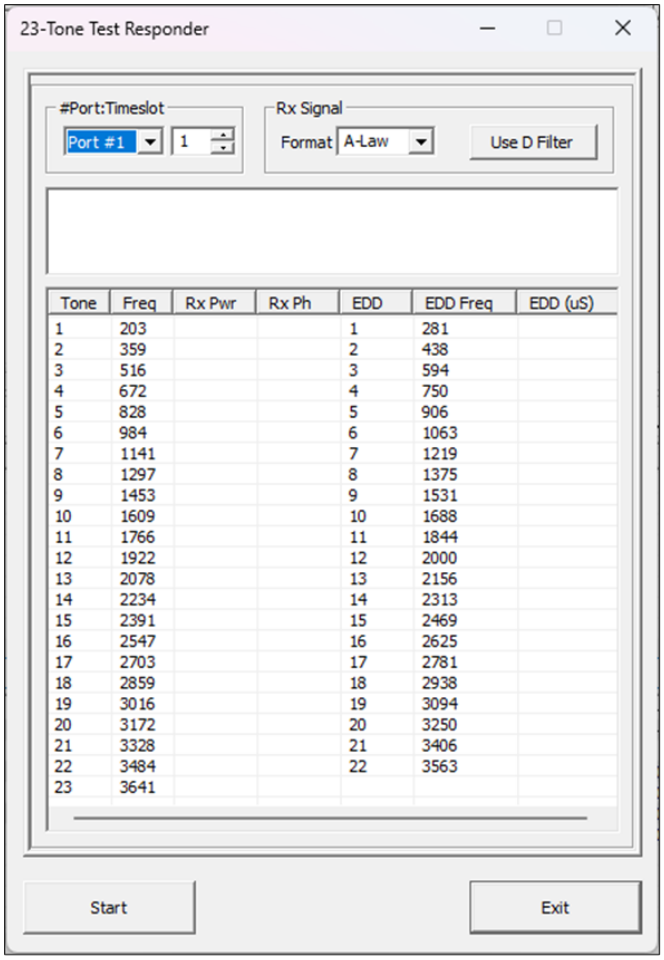
The **Test Director** is responsible for generating and injecting 23 distinct test tones into the communication channel. These tones serve as a reference signal for evaluating parameters such as frequency response, distortion, and noise levels. By transmitting a well-defined set of tones, the Test Director ensures that the receiver has a known signal for comparison, enabling accurate performance analysis.



23-Tone Test - Director (Tx)

23-Tone Test - Responder (Rx)

The **Test Responder** is the receiving component that captures and analyzes the test tones after they pass through the communication channel. It compares the received tones with the originally transmitted signals to measure deviations caused by factors such as distortion, phase shifts, noise, and attenuation. The Test Responder helps identify transmission issues, ensuring that the communication system meets quality standards.

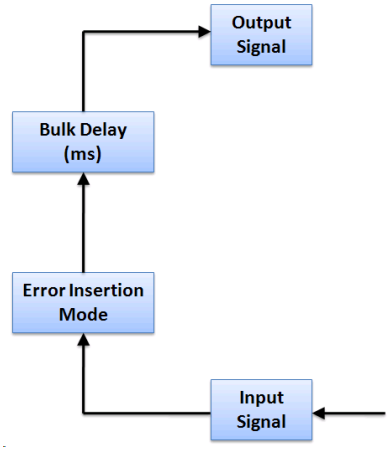


Tone	Freq	Rx Pwr	Rx Ph	EDD	EDD Freq	EDD (uS)
1	203			1	281	
2	359			2	438	
3	516			3	594	
4	672			4	750	
5	828			5	906	
6	984			6	1063	
7	1141			7	1219	
8	1297			8	1375	
9	1453			9	1531	
10	1609			10	1688	
11	1766			11	1844	
12	1922			12	2000	
13	2078			13	2156	
14	2234			14	2313	
15	2391			15	2469	
16	2547			16	2625	
17	2703			17	2781	
18	2859			18	2938	
19	3016			19	3094	
20	3172			20	3250	
21	3328			21	3406	
22	3484			22	3563	
23	3641					

23-Tone Test - Director (Tx)

Bulk Delay

Bulk delay is an added feature in Error insertion application that allows users to apply Bulk delay on the entire T1 E1 trunk (full multi-frame) of 1.544Mbps (T1) pipe or 2.048 Mbps (E1) pipe. This helps to simulate network delay along the T1 E1 links. After selecting or adjusting the delay, the Delay will fill a buffer and begin transmitting the signal; this will cause the T1 or E1 multi-frame signal to briefly lose sync when applying the delay.

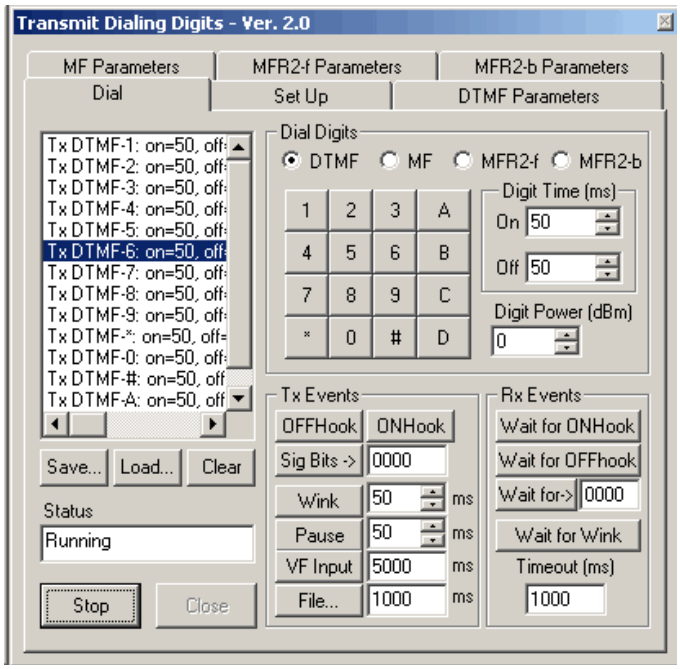


Bulk Delay

- Bulk delay can be applied in either microseconds or milliseconds units
- Delay can be varied from 0 to 169.77mSec or 69 to 169845 µSec in T1 and 0 to 127.99mSec or 46 to 128042µSec in E1 with an accuracy of +/- 10uSec
- By cascading E1s one can achieve larger delays >127 ms
- The delay resolution is based on the byte increments of T1 or E1 (8 bits at a time)

Transmit DTMF/MF (MFR2-F, MFR2-B) Digits (XX022 Included with Basic Analyzer)

The transmit applications provide the ability to transmit DTMF, MF, MFC-R2-forward and MFC-R2-backward digits on one or more time slots. The application displays call script window to view the various digits, and transmit/ receive events. The call-script 'save' feature allows the script display to be saved as a text file, and the 'load' feature allows the scripts to be loaded from a file.



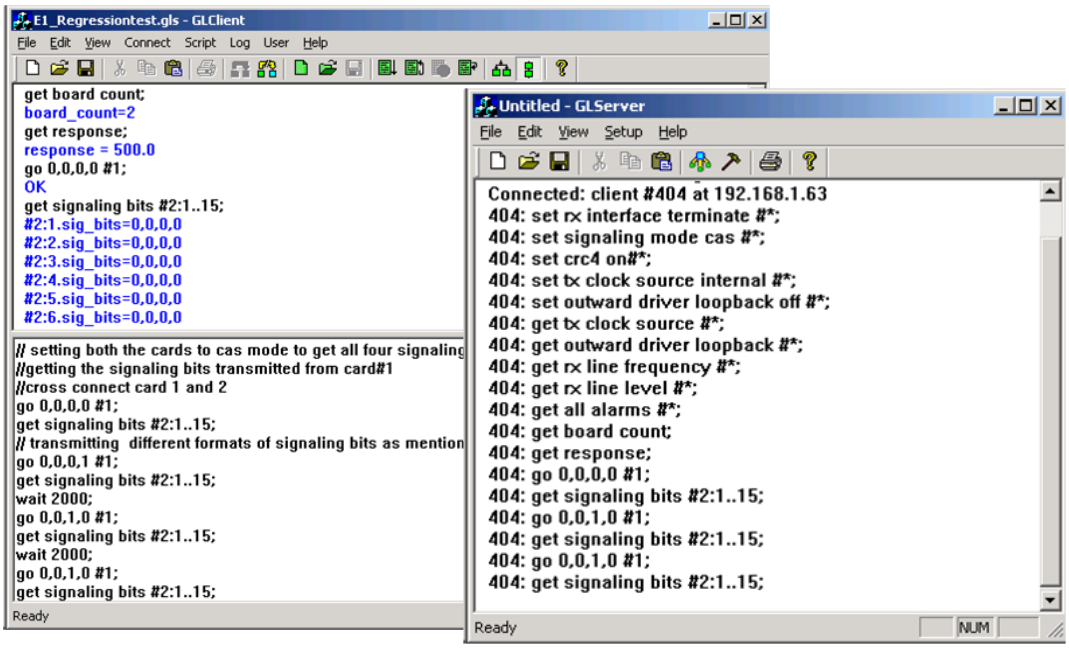
Transmit Dialed Digit

Windows Client-Server (XX600 Included with Basic Analyzer)

Client / Server applications 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. Almost every GUI application has a WCS counterpart. Now, Windows Client / Server available as a part of Basic Applications in T1 E1 Analyzer.

GL provides sample-working clients in C++, VB, and TCL along with the server.

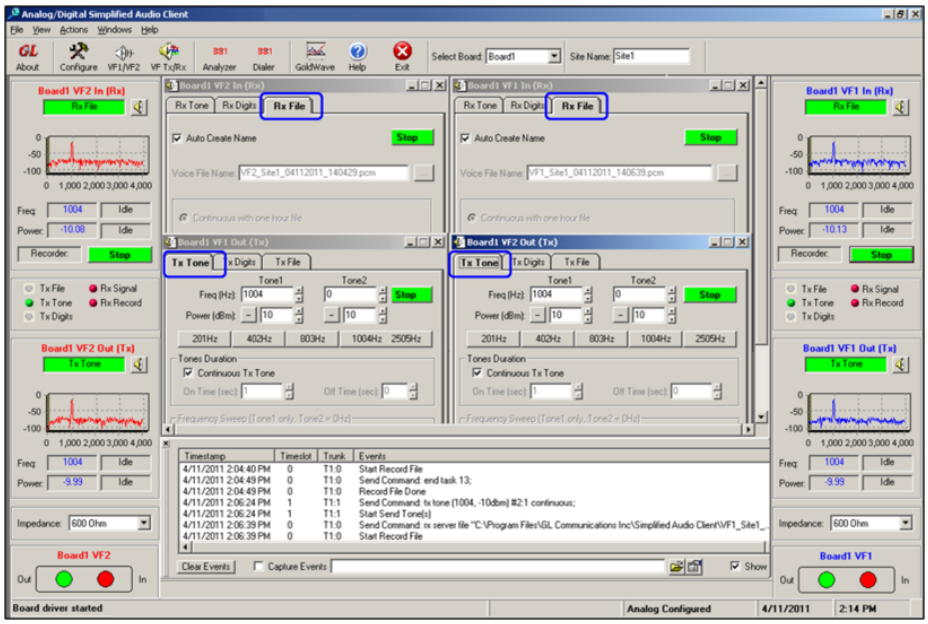
With additional licenses, various modules can be obtained to suit the testing requirements. Refer to WCS Modules.



GL Client-Server

Dual VF Tx Rx – (XX605 Included with Basic Analyzer)

The **Dual VF Tx Rx** (earlier called as Simplified Audio Client) is now a part of Basic Applications in T1 E1 Analyzer. This application is designed exclusively to perform non-intrusive and intrusive VF audio monitoring, VF audio recording, and testing easily. SAC provides an alternate and simple GUI as against the T1 E1 Analyzer applications in basic software to perform analog Tx/Rx functions.



Simplified Audio Client Analog Configuration

Buyer's Guide

Item No	Related Software
XX010	Application Development Tool Kit (Programmer's Guide)
XX018	Multi-Channel BERT Software
XX019	Transmit/Receive File Utility Software
XX020	Record/Playback File Software
XX021	FDL Software for ESF (T1 only)
XX022	DTMF/MF Detector & Generator Software
XX023	T1 A-law or E1 μ-law Software
XX051	Synchronous Trunk Record Playback
XX031	Enhanced T1 / E1 Call Capture/Analysis Software
XX031	T1 or E1 Call Capture and Analysis Software w/ Traffic Activated Trigger Option
CDR032	Call Data Records
VBA032	Voice Band Analyzer
VBA033	Two-Wire Echo Analysis for VBA
VBA036	Traffic Analysis for VBA
VBA038	Fax Demodulator / Decoder
XX600	Basic Client/Server Scripted Control Software (Included with Basic Software)
XX605	Dual VF Tx Rx (Only for tProbe) (Included with Basic Software)
XX606	Pulse Shape & Jitter Measurement (Included with Basic Software)
XX610	w/ File based Record/Playback
XX616	T1 E1 WCS Client Python Module
XX620	Transmit/Detect digits (included with basic software)
XX625	w/ CAS Simulator
XX626	w/ SS1 Signaling Analyzer and Dialer
XX629	w/ISDN Emulation
XX630	w/ DSP Capability
XX631	w/ Dynamic DSP Capability
XX634	High Throughput HDLC Tx/Rx Test
XX635	High Throughput PPP Tx/Rx Test
XX636	High Throughput MC-MLPPP Tx/Rx Test
XX640	File based HDLC Record/Playback

Buyer's Guide

Item No	Related Software
XX641	File based HDLC Remote Record/Playback
XX643	w/ MTP2 Emulation
XX646	w/High Throughput TRAU Tx/Rx Test
XX647	Scripted ISUP Conformance Testing (MAPS™ SS7 Conformance)
XX648	Scripted ISDN Simulator (MAPS™ ISDN)
XX649	Scripted ISUP Emulation (MAPS™ SS7)
XX694	Scripted MAP Emulation (MAPS™ MAP)
XX651	w/ SA bits Encode/Decode
XX696	Scripted CAMEL AP Emulation (MAPS™ CAP)
XX624	Scripted FXO FXS Emulation using MAPS™ (MAPS™ FXO FXS)
XX652	Scripted CAS Simulator (MAPS™ CAS)
XX654	Scripted MLPPP Conformance Testing (MAPS™ MLPPP)
XX650	Inverse Multiplexing for ATM Emulation
XX655	MultiLink Frame Relay Emulation w/ Tx/Rx Test
XX660	w/ FDL
XX670	w/Multi-Channel Rx BERT
XX680	w/Traffic Classifier
XX690	SS7 Protocol Decode Agent
XX691	ISDN Protocol Decode Agent
XX692	Scripted GSM A Interface Emulation (MAPS™ GSM A)
XX693	Scripted GSM Abis Interface Emulation (MAPS™ GSM Abis)
XX003	Timeslot Delay Loopback for T1 (Currently implemented in Octal T1 E1 Analyzer) Timeslot Delay Loopback for E1 (Currently implemented in Octal T1 E1 Analyzer)
XX062	Echo Path Delay/Loss Simulation Software
XX063	Echo Path Delay/Loss Measurement Software
XX065	G.168 Test Suite for T1 & E1 Echo Cancellers (Manual Testing Software and Procedures)
XX066	Digital Echo Canceller
XX067	Automated Echo Canceller Testing w/o VQT
XX068	Semi-Automated and Scripted Echo Canceller Testing Suite w/ C++ Client w/ LabView Client w/ Matlab Client

Buyer's Guide

Item No	Related Software
PKB070	Audio Processing Utility
PKB080	Automated Echo Canceller Testing TDM-VoIP
PKB081	Automated Acoustic Echo Canceller Compliance Testing (Partial Tests)
AEC001	AutoEC Test Viewer
EMU037	Echo Measurement Utility (EMU) Software
XX089	Protocol Identifier
XX090 OLV090	T1 or E1 Real-Time HDLC Analysis/Playback/Simulate Software Offline/ Remote HDLC Analyzer
XX095 OLV095	E1 Real-Time SA Bit HDLC Analysis Offline SA Bit HDLC Analyzer
XX100 OLV100	T1 or E1 Real-Time ISDN Protocol Analyzer Offline / Remote ISDN Analyzer
XX105	T1 or E1 Real-Time ISDN Protocol Emulator
XX110 OLV110	E1 Real-Time V5.x Protocol Analyzer Offline / Remote V5.x Analyzer
XX120 OLV120	T1 or E1 Real-Time SS7 Protocol Analyzer Offline / Remote SS7 Analyzer
XX130 OLV130	T1 or E1 Real-Time Frame Relay Protocol Analyzer Offline/ Remote Frame Relay Analyzer
XX135 OLV135 XX136 OLV136	ML-PPP Analyzer Offline ML-PPP Analyzer PPP and MLPPP Packet Analysis Offline PPP and ML-PPP Packet Analysis
XX140	T1 or E1 Real-Time GR303 Protocol Analyzer
XX142	CDMA2000 Protocol Analyzer
XX150 OLV150 XX151 OLV151	T1 E1 Real-Time GSM Protocol Analyzer Offline GSM Analyzer w/Motorola Mobis Decode with Motorola Mobis decodes
XX153 OLV153	T1 E1 Real-Time TRAU Protocol Analyzer TRAU Traffic Playback TRAU Toolbox™ Offline TRAU Analyzer

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Buyer's Guide (*Contd.*)

Item No	Related Software
XX155	T1 or E1 Real-Time GPRS Protocol Analyzer
OLV155	Offline GPRS Analyzer
XX160	T1 or E1 Real-Time ATM Analyzer
OLV160	Offline ATM Analyzer
XX162	ATM BERT
XX165	UMTS Analyzer
OLV165	Offline UMTS Analyzer
PKV170	NetsurveyorWeb™ (Perpetual License, Unlimited Users/Nodes)
PKV169	NetsurveyorWeb™ Lite
PKV171	NetSurveyor Agent Toolkit
DC007	DCME Test & Analysis Software w/Desktop PC
DC008	DCME Test & Analysis Software w/Portable PC
SA048	Goldwave Software
STE40	Mux/Demux Software
STE50	Sample Traffic Files

Item No	Related Hardware
XTE001	Dual T1 E1 Express (PCIe) Boards (requires additional licenses)
XUT001	Dual T1 E1 Express Card Basic T1 Software (includes xx600, xx605)
XUE001	Dual T1 E1 Express Card Basic E1 Software (includes xx600, xx605)
FTE001	QuadXpress T1 E1 Main Board (Quad Port™ requires additional licenses)
ETE001	OctalXpress T1 E1 Main Board plus Daughter Board (Octal Port™ requires additional licenses)
ETA001	Basic Software for T1 (includes xx600, xx605) (zero dollar, but required with appropriate licenses)
EEA001	Basic Software for E1 (includes xx600, xx605) (zero dollar, but required with appropriate licenses)
XX003	Timeslot Delay Loopback for T1 (Currently implemented in Octal T1 E1 Analyzer)
	Timeslot Delay Loopback for E1 (Currently implemented in Octal T1 E1 Analyzer)
PTE001	tProbe™ T1 E1 Base Unit
PTA001	tProbe™ Basic T1 Software (includes xx600, xx605)
PEA001	tProbe™ Basic E1 Software (includes xx600, xx605)
PTE015	w/ 2Wire FXO and FXS Optional Board
PTE025	Data Communications Board for Interfaces RS-232, RS-449, EIA-530, V.35, and many others

Note: PCs which include GL hardware/software require Intel or AMD processors for compliance.

For more information, please visit T1 E1 Testing webpage.

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