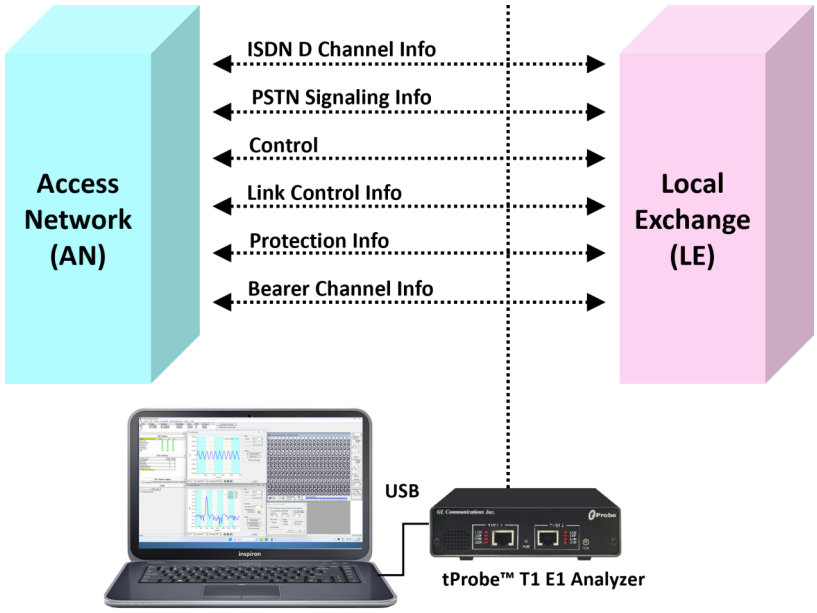
V5.x Protocol Analyzer



Overview

V5.x is a switching and signaling telecommunication protocol between Access Network (AN) and Local Exchange (LE) and operates only on E1 circuits.

GL's V5.x analyzer can be used to capture and analyze a stream of frames from the link between LE and AN. The analyzer provides V5.x based on ETSI / ITU standard in order to decode according to the corresponding standards. Supports capturing and decoding of LAPV5, ISDN Call Signaling - Q.93 as layer 3, Link Control Protocol (LCP), Protection Protocol (PP), Bearer Channel Connection (BCC), and PSTN.

GL Communications supports the following types of ISDN analyzers:

- Real-time V5.x Analyzer (Pre-requisites: GL's E1 internal cards or E1 external units, required licenses and Windows® Operating System)
- Remote/Offline V5.x Analyzers (Pre-requisites: Hardware Dongles and Windows® Operating System)

For more details, refer V5.x Protocol Analyzer webpage.

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Main Features

Display

- Displays Summary, Detail, Hex-dump, and Statistics Views
- Detail View:
  - Displays decodes of a user-selected frame from the summary view
  - Provides options to display or hide the required protocol layers
  - Contents of this view can also be copied to clipboard
  - Provides option to toggle detail view vertically or horizontally as feasible for the user
- Summary View displays Dev #, Time Slot, Frame #, LAPD information, ISDN Message types, and etc in a tabular format
- Hex dump View displays the frame information in HEX and ASCII format, the contents of this view can also be copied to clipboard
- Any protocol field can be added to the summary view, filtering, and search features providing users more flexibility to monitor required protocol fields
- Option to combine data from multiple columns under one column
- Option to create multiple aggregate column groups and prioritize the groups as per the requirement to display the summary results efficiently

Supported Protocols

- V5 ITU Standard, V5 ETSI Standard

Filtering / Search

- Advanced filtering and search based on any user selected protocol fields
- Allows the user to automatically create search/filter criteria from the current screen selection

Capturing Streams

- Streams can be captured on the selected time slots (contiguous or non-contiguous), sub-channels or full bandwidth
- Frames can be transmitted/captured in either 64 kbps, 56 kbps, n x 64 kbps, or n x 56 kbps data channels (hyper-channels)
- The following variations are accommodated in the software: inverted or non-inverted data, byte reversal or non-reversal
- Multiple streams of V5.x traffic on various T1 E1 channels can be simultaneously decoded with different GUI instances

Export Options

- Exports Summary View information to a comma delimited file for subsequent import into a database or spreadsheet
- Capability to export detailed decode information to an ASCII file

Call Detail Recording

- Call Detail Recording feature includes data link groups that help in defining the direction of the calls in a given network and form logical groups comprised of unidirectional (either 'Forward' or 'Backward') data links

Remote Monitoring

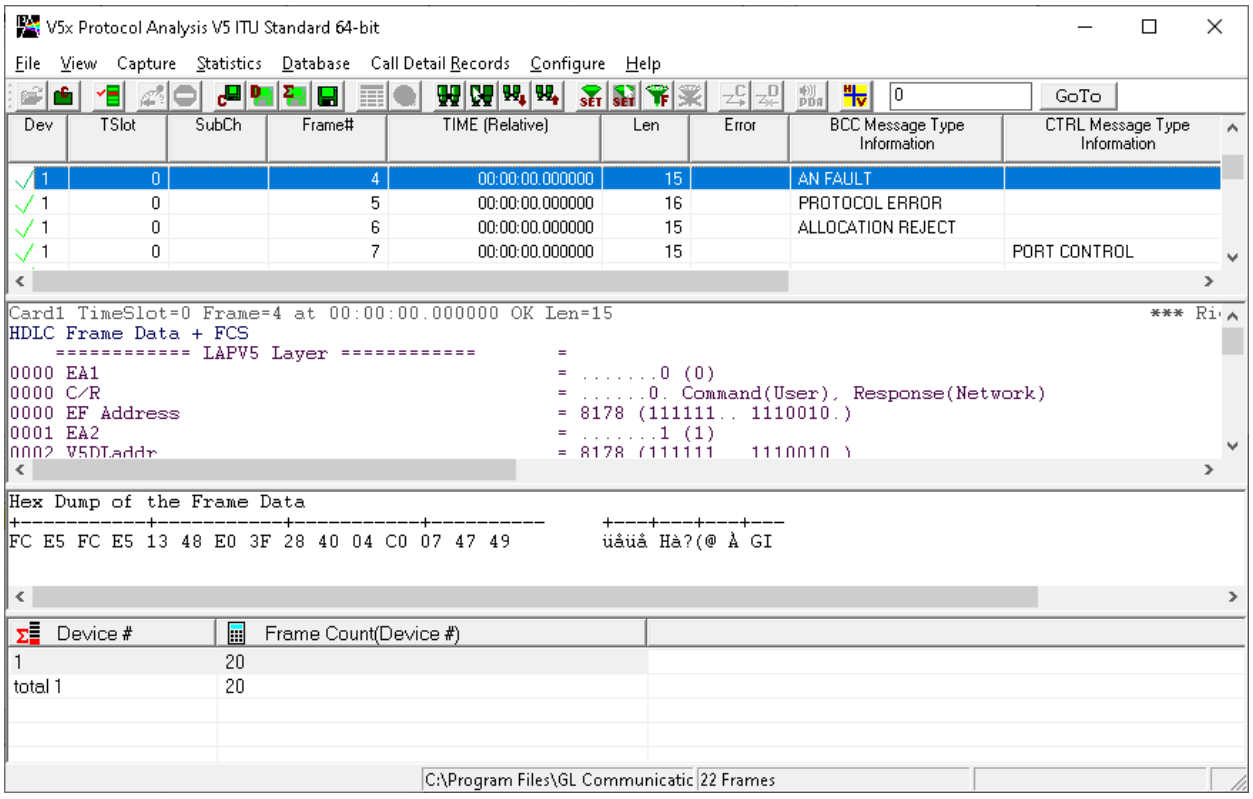
- Remote monitoring capability using GL's Network Surveillance System

Additional Features

- Status bar displaying information regarding running percent utilization, Number of frames captured, CRC errors and Frame errors and others
- Trace files for analysis can be loaded through simple command-line arguments
- Multiple trace files can be loaded simultaneously with different GUI instances for offline analysis

Summary, Detail, and Hex dump Views

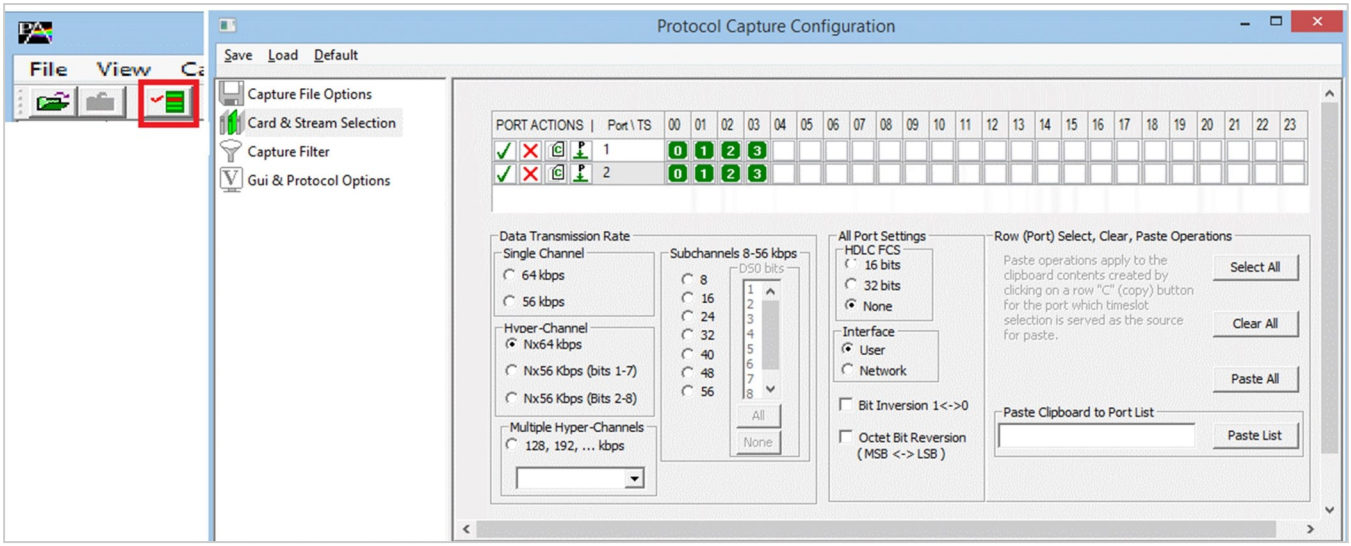
The analyzer displays Summary, Detail, and Hex dump view in different panes. The Summary View displays Frame Number, Time, Length, Error, C/R, SAPI, CTL, P/F, EF Address, FSM State, L3Addr FUNC, and more. User can select a frame in Summary View to analyze and decode in the Detail View. The Hex dump View displays the frame information in HEX and ASCII format.



Summary, Detail, and Hex dump Views

Real-time and Offline Analysis

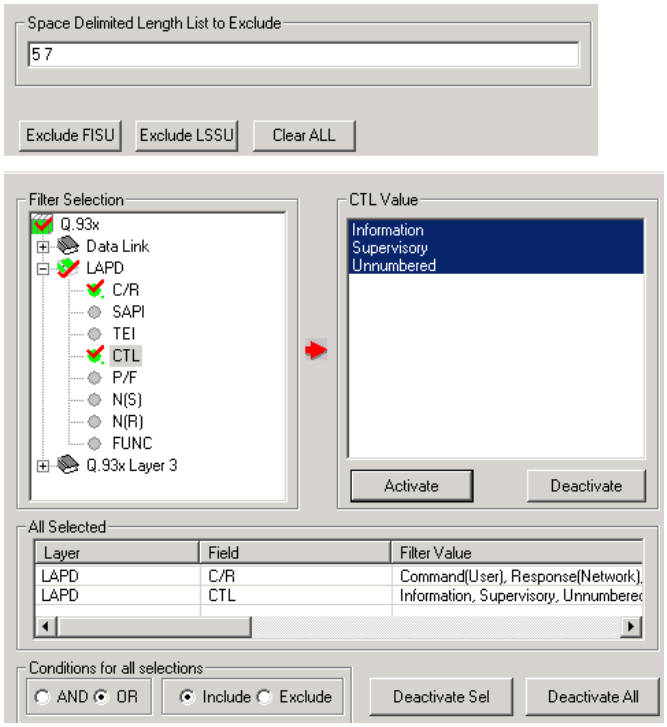
Users can capture and analyze V5.x frames using either real-time or remote analyzers, and record all or filtered traffic into a trace file. The recorded trace file can be used for offline analysis or exported to a comma-delimited file, or ASCII file. Real-time capturing requires user to specify timeslots, bit inversion, octet bit reversion, user/network side, FCS, and data transmission rate. Recorded trace file can be played back on T1 E1 using the HDLC file Playback application.



Stream / Interface Selection

Filtering and Search

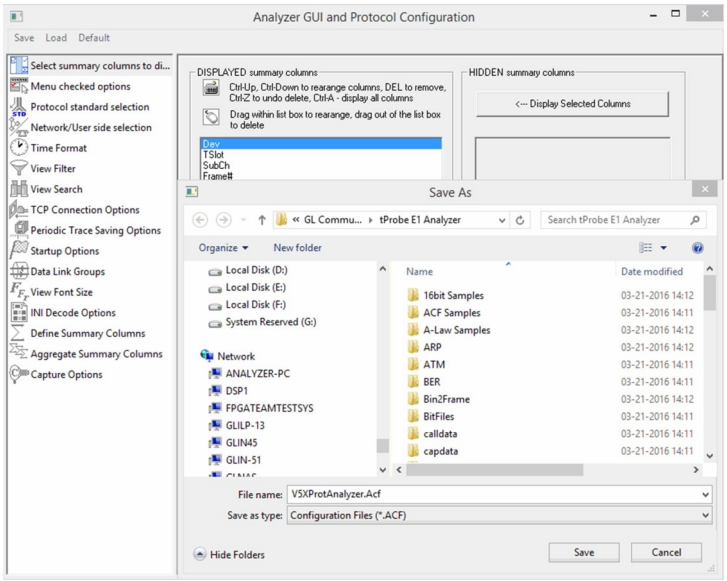
Users can record all or filtered traffic into a trace file and also can create search/filter criteria automatically from the current screen selection. Filter and search capabilities adds as another powerful feature to the ISDN analyzer. These features isolate required frames from all the captured frames in real-time/remote/offline. Users can specify custom values for frame length to filter frames during real-time capture. The frames can also be filtered after completion of capture based on C/R, SAPI, TEI, CTL, different ISDN message types and more. Similarly, search capability helps user to search for a particular frame based on specific search criteria.



Real-time and Offline Filter

Save / Load All Configuration Settings

Protocol Configuration window provides a consolidated interface for all the important settings required in the analyzer. This includes various options such as protocol selection, startup options, stream/interface selection, filter/search criteria and so on. All the configuration settings can be saved to a file and then loaded for future operations, or user may just revert to the default values using the default option.

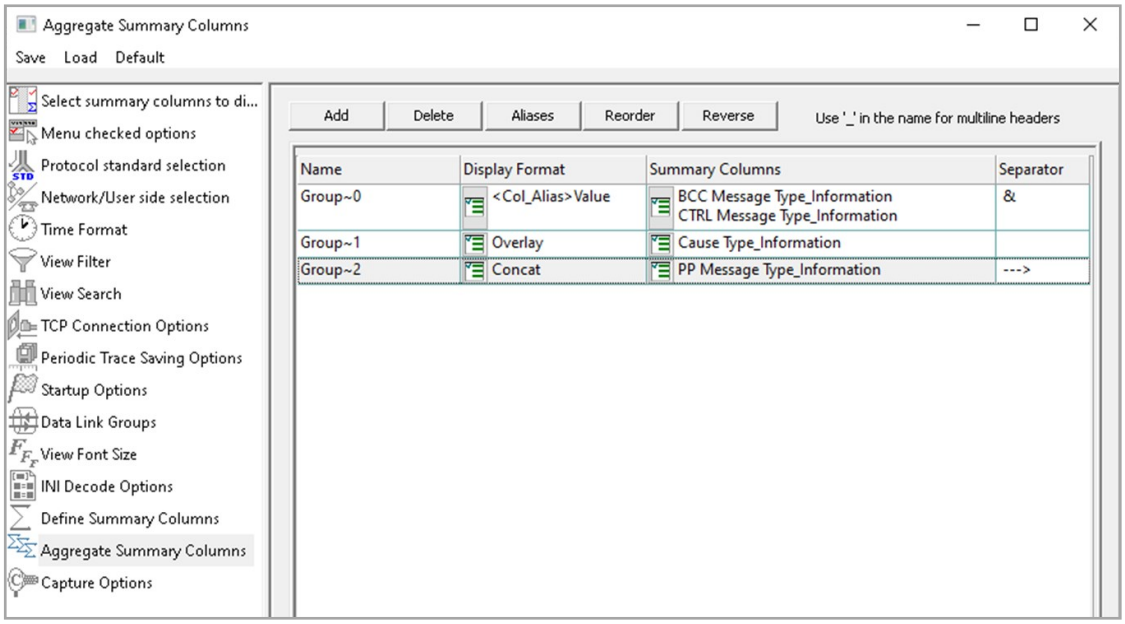


Save / Load Configuration

Aggregate Column Group

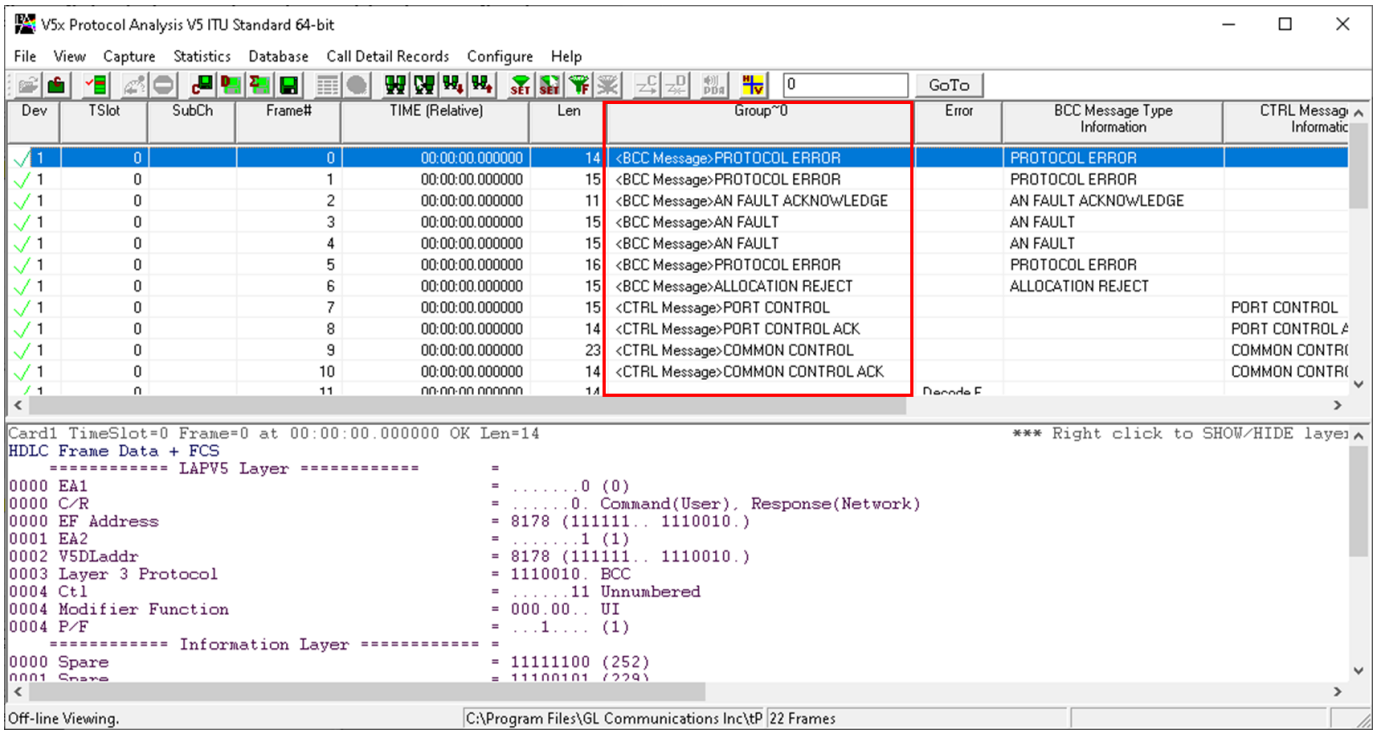
The enhanced feature of the protocol analyzer is aggregate column groups. The user can also create multiple aggregate column groups and prioritize the groups as per the requirement to display the summary results in an efficient way.

If the user has five different aggregate columns and wants to prioritize some columns, the user can create a group of aggregate columns with the highest priority and will display only the columns of chosen priority. If the values are null, then the next group values are displayed. The aggregate columns comprising a group will have the same prefix and suffix index as ~0, ~1 … ~N. The **group~0** is the root aggregate group that has the highest priority.



Aggregate Column Group

The updated results are as shown in the figure below. Here the root aggregate group~0 summary columns are displayed first and then Group~1 and Group~2 as per the assigned priority if the higher group values are null.

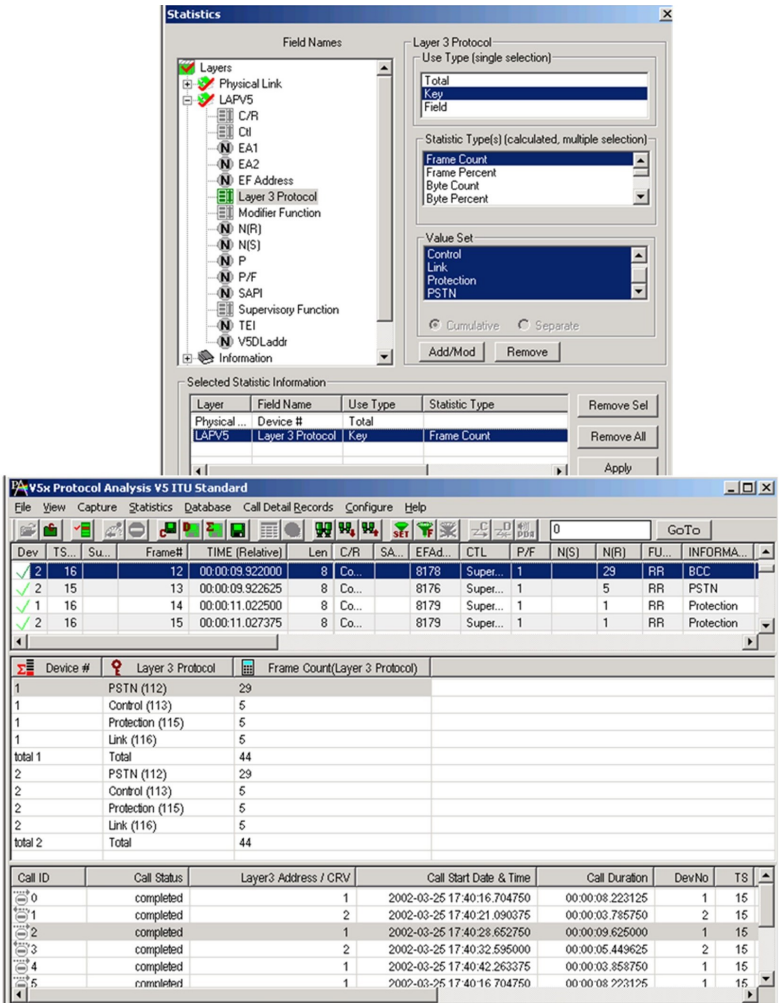


Display of Aggregate Column Group in Summary View

Call Detail Record and Statistics View

Important call specific parameters like Call Id, Calling No, Called No, Call duration, status of each call (i.e. Active/Completed), Device No, Timeslot, CRV, etc are calculated based on signaling messages and displayed in Call Detail Record View. Additionally, users are provided with the option to search a particular call detail record from the captured traces.

Various statistics can be obtained in statistics view to study the performance and trend in the V5.x network based on protocol fields and parameters.



Statistics and Call Detail Record View

Supported Protocol Standards

The supported protocol standards in V5x analyzer are V5 ITU Standard and V5 ETSI Standard.

Supported Protocols	Specification Used
LAPV5	
PSTN	
BCC	IIU-T Q921, G.964 & G.965
PP	
Link Control	
ISDN Q.931	IIU-T Q.931

Buyer's Guide

Item No	Product Description
XX110	E1 Real-time V 5.x Analyzer Software
OLV110	Offline/Remote V5.x Protocol Analyzer

Item No	Related Software
XX020	Record/Playback File Software
XX610	File based Record/Playback (Client side) ClientDataTxRx (Server side)

Item No	Related Hardware
PTE001	tProbe™ Dual T1 E1 Laptop Analyzer with Basic Analyzer Software
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)
XTE001	Dual T1 E1 Express (PCIe) Boards (requires additional licenses)

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

For more details, refer V5.x Protocol Analyzer webpage.