It is assumed that the GL's T1E1 Hardware, Software, and License installations are already performed by referring to the respective T1E1 hardware Quick Installation Guide (for example, T1E1-Dual-USB-tProbe-Analyzer-Quick-Install-Guide.pdf). Also perform license installation for the purchased protocol analyzer software.

<u>*Note*</u>*: Proceed to the verification steps below after successfully installing the T1E1 hardware, software, and verifying the required T1E1 hardware licenses (for example, PTA001, PEA001 applicable for tProbe™ T1E1 Analyzer).*

Verification

The below example depicts selection of required ports and timeslots, specifying capture file options, starting Real-time capture of T1E1 frames for further analysis.

- After successful installation of T1E1 hardware such as, tProbe, Portable USB, Universal PCI Board, Dual PCIe Express T1E1 Boards, and Octal / Quad T1E1 PCIe Express Board.

- Double-click on the T1E1 application short-cut icon created on the desktop.

> **Note:**
> If there is no live T1 E1 traffic, then use **HDLC Playback** application to transmit HDLC frames over T1 E1 channels from pre-recorded files. For more details, refer to **T1E1-HDLC-Playback-Quick-Verification-Guide.pdf**

- Select **Special Applications → Protocol Analysis → HDLC Analysis**. User can select any HDLC protocol analyzer as required, such as CDMA A1, GPRS GB, GSM, GR-303, HDLC, ISDN, SS7, and V5.X. In this example, HDLC protocol analyzer is selected.

- Select **Capture → Capture File Options**, click on browse button, select the desired location and enter the temporary file name to store the captured T1 E1 traffic in HDL file format with the specified file name. Close the window.

- Select **Configure → Protocol and GUI Options.** From the left pane, click on **Protocol Standard Selection** and select the protocol standard as required.

- Select **Capture → Stream Interface Selection** or click on stream / interface icon on the protocol analyzer and specify the following options as required.

  > Click on ✓ to select all timeslots on the required port to capture the T1 E1 traffic. Port Actions can also be performed while selecting timeslots, click on the icons to select all, cancel, copy, or paste timeslots as required.

  - ✓ - Select all timeslots
  - ✗ - Deselect all timeslots
  - © - copy selected timeslots
  - ⊥ - paste the timeslots on other ports, this will select the same timeslots as copied in the clipboard

  > Specify Data Transmission Rate as either Single Channel, Hyper Channel, or Sub channel

  > Under All Port Settings options, configure below port settings as required.

  - Set the HDLC FCS port settings to 16 bits
  - Check the interface option as 'User'
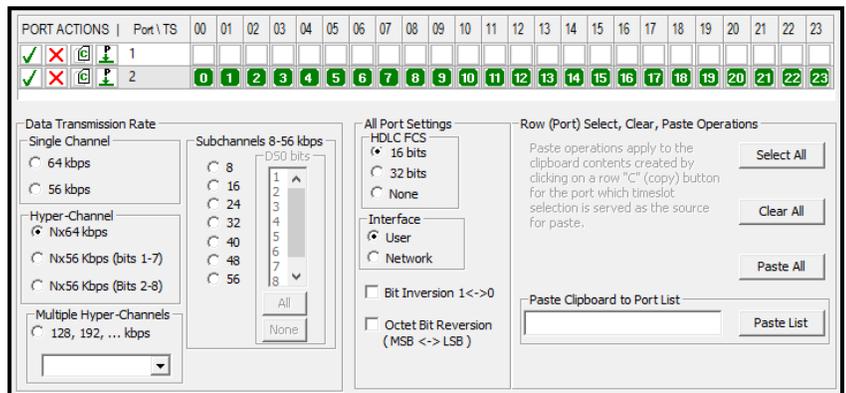
- After configuring **Stream/Interface** options, close the window.

- On the protocol analyzer, click **File → Start Real-time** or click on the ![icon] icon to start the Real-time analyzer.

- A warning message for overwriting the temporary trace file is displayed. If you want to overwrite click **Yes,** else, click **No** and save it as a new file in the desired location.

- Observe the T1 E1 traffic being captured in the Protocol Analyzer on the selected port and timeslots.

- Columns can be defined on the **Summary View** by selecting **Configure Menu → Protocol and GUI Options → Define Summary Columns**.

- Column Search can be performed to search for a particular value on the selected column. Right-click on the column for which column search is required and select **Summary Column Search**, this will display **Single Column String Search** window to search the required value.

  - For example, in the **Single Column String Search** window specify the value as 10, 11, or 12 and click on ![>] (Next) or ![<] (Previous) button to search specified value on the selected column.

  - In the search option, wildcards can also be used to search for a specific pattern such as "1?", this will search any value after 1 like 10, 11, 12, 13, 14, 15, 16, 17, 18, 19.

- Select **View** > **Filtering Criteria** or on the protocol analyzer click on ![SET] icon, this will display Filtering Criteria dialog window. Expand the protocol field and set the filter value as required.

- After the filtering criteria have been set, select **View** > **Activate Filter** or on the protocol analyzer click on ![icon] icon to activate the filter and observe the summary view to see the filtered values.

Troubleshoot

If the captured T1E1 traffic show decode errors then, troubleshoot with the following steps:

- Check if the analyzer software invokes with the following alarm errors then, ensure that T1E1 Crossover cables are properly plugged-in.

T1/E1 Alarms				
Reset	All Ports	#1	#2	
Sync Loss	✗	✗	✓	
Bipolar Violation	. H	✓	. H	
Carrier Loss	✗	✗	✓	
Frame Error	. H	✓	. H	
Blue Alarm	✓	✓	✓	
Yellow Alarm	✓	✓	✓	
AIS	✓	✓	✓	

- Check if the Card settings for **Termination** is set to **Terminate** mode for all the ports and click on ![Reset] button to get the sync on both the ports.

- Check if proper **Protocol Standard** is selected, if wrong protocol standard is selected then, decode error will occur. Select the proper protocol standard as explained in the Verification section.

- In case of **Bridge** mode, make sure that **Y-Bridge** cables are connected properly to capture T1 E1 traffic non-intrusively