Enhanced Bit Error Rate Test

Testing on Multiple Cards Simultaneously
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Independent Control of Tx & Rx Settings
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Supports static & user-defined patterns
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Sub-channel Selection (Fractional BERT Within a Timeslot)
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Error Rate from 10^{-9} to 10^{-2} & User-defined
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Quick View of the Status and Trouble Indication
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Supports Real-time & Offline Graphical View of Events
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Sophisticated Logging and Charting Feature
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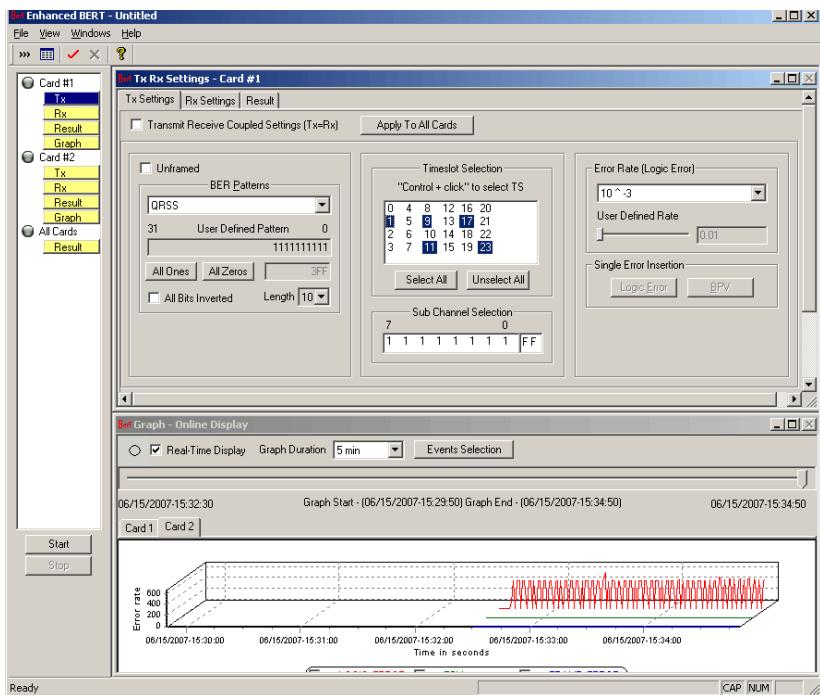
Overview

The **Enhanced Bit Error Rate Tester** measures the correctness of data received on T1/E1 lines (contiguous and non-contiguous timeslots, sub-channels) according to a repetitive fixed or pseudorandom pattern for a given transmission. The application also supports sub-channel selection (fractional BERT within a timeslot) for finer control of testing on individual bits.

The application generates/detects framed, unframed, fractional, and sub channel BER patterns with a variety of standard static and pseudorandom data patterns such as QRSS, All Zeros/ Ones, CSU and NIU Loop-Up/Loop, and user defined patterns.

The Bit Error Rate Testing can be performed simultaneously in real-time or off-line mode on multiple cards along with a consolidated result view in tabular / graphical formats. The Tx and Rx settings can be independently controlled or set as coupled.

Main Features

- Online (real-time) view of events and offline view of saved events are supported through a powerful graphic event viewer application.
- Supports testing on multiple cards simultaneously with consolidated result view.
- Non-contiguous timeslot and Sub-channel selection (Fractional BERT within a timeslot), for finer control of testing on individual bits.
- Supports various bit patterns such as-QRSS, 2^5-1, 2^9-1, 2^11-1, 2^15-1, 2^20-1, 2^23-1, All ones, All zeros, 1:1, 1:7, 3 in 24, CSU Loop-Up (0001), CSU Loop-down (001), NIU Loop-UP (11000), and NIU Loop-Down (11100).
- Supports user defined patterns of size up to 32 bits.
- Improved error insertion capability with predefined error insertion rate (from 10-9 to 10-2) or user defined error rate.
- Supports saving results in a file by limiting the file length either by defined time or size.
- Sophisticated logging and charting of events for real-time as well as offline analysis.
- Versatile XML format for events or error logging.
- Tx and Rx settings can be independently controlled or coupled.
- Quick view of the status and trouble indication for a particular card.
- Save and Load configuration settings.

For more details, visit http://www.gl.com/enhancedbert.html

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Operation

The application's operational system includes a data receiver unit, error & pattern generator unit, a comparator, and a statistics-counting unit.

The data receiver unit allows the data to be captured in real-time and load the result files in offline. The comparator receives incoming data & generated patterns, compares them, and determines whether both are the same or not, and outputs a comparison result. The statistics unit counts the number of bit errors based on the comparison result.
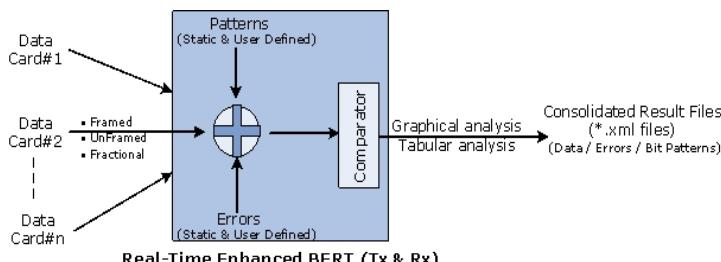
Figure: Operation

Analysis

For real-time analysis, various predefined bit patterns such as QRSS, 2^5-1, 2^9-1, 2^11-1, 2^15-1, 2^20-1, 2^23-1, All ones, All zeros, 1:1, 1:7, 3 in 24, CSU Loop-Up (0001), CSU Loop-down (001), NIU Loop-UP (11000), and NIU Loop-Down (11100) along with user defined bit patterns of size up to 32 bits are supported.

Predefined error (from 10^{-9} to 10^{-2}) and user defined error insertions are also supported for analysis.

Result Options

The result files are logged in the file (*.xml formats), the size of which can be limited either with the time duration or with the size settings.

Display only option gives only the real-time graphical display & does not save the files for any particular card / s.

Save To File Only option saves the results in a file with *.xml format without any graph display, which can be later used for offline analysis.

Save To File and Display option saves the result files and gives graphical display of the results.
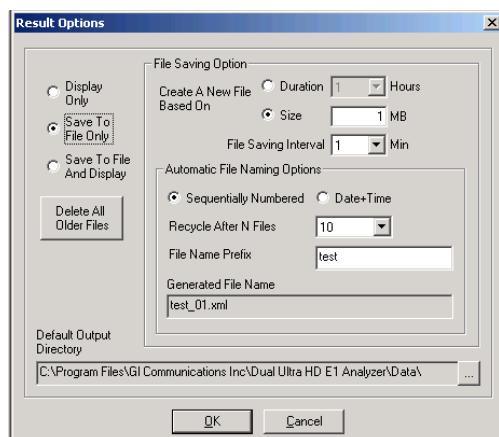

Figure: Result Options

Tabular Result

List of frame error statistics, bipolar violations statistics indicating the number of violations of the AMI coding rule, logic errors statistics such as - Status/Errors, Total Bit Errors, Error Rate (Cont), Error Second (ES), Err Free Second (EFS), %EFS, Severely Err Sec (SES), %SES, Degraded Minutes, %Dmin, Loss of Sync Count, Loss of Sync Sec, Available Seconds, %Available Sec, & Unavailable Seconds.

Figure: Tabular Result View

Graphical Result

In offline analysis, saved result (*.xml) file is loaded for the graphical and tabular summary of the BER files.
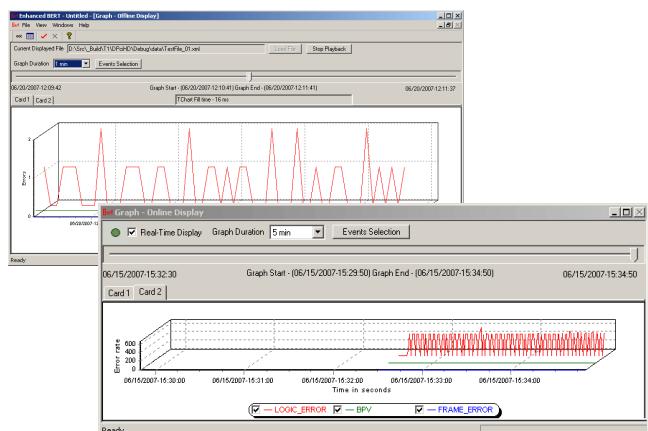

Figure: Offline and Real-Time Graphs

Buyer's Guide

UTE001 - USB based Dual T1/E1 Laptop Analyzer
UTA001/UEA001 – Basic USB based Dual T1/E1 Laptop Analyzer Software
HTE001 - Universal HD T1 or E1 PCI Cards
HUT001/HUE001 – Basic Universal HD T1/E1 Software
Optional Software
XX018 - Multi-Channel BERT Software
XX020 - Record/Playback File software
XX019 - Transmit / Receive File Utility Software
XX600 - Basic Client/Server Scripted Control Software
XX610 - Transmit and Receive File Capability

*Specifications and features subject to change without notice.