

Supports ATM, POS, RAW,
and Ethernet Traffic

Up to 2 Giga Bytes of DDR2
RAM

USB 2.0 Interface for
Portability

Ethernet Testing through
GigE Interface

High Performance 4x PCIe
Compliant Interface

Alarms and Error Logging

Emulation & Analysis of PPP
and HDLC carrying IP Traffic

Tx/Rx Test for POS, ATM

Wirespeed Record / Playback
for ATM, POS, RAW

ATM Protocol Analysis for
AAL2 and AAL5

Wirespeed BERT over ATM,
POS, and RAW formats

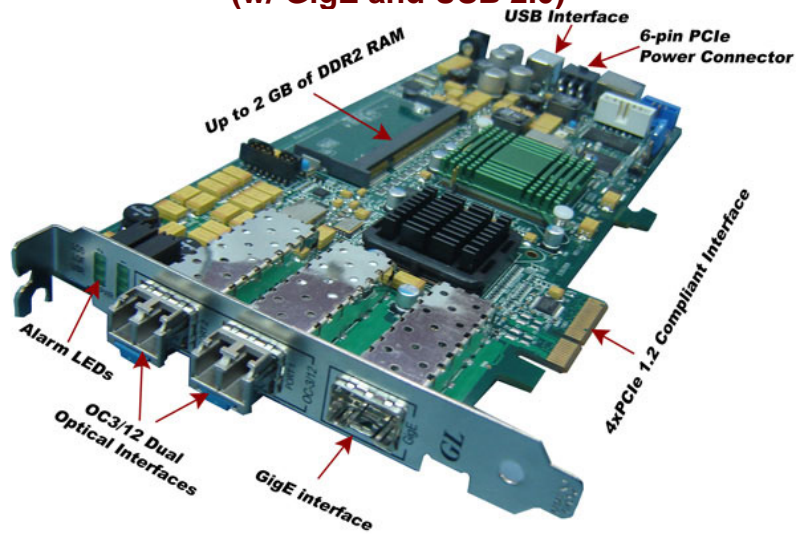
Filtering Options

Precise Time stamping

LightSpeed 1000

OC3/12 and STM1/4 Analysis and Emulation Card

(w/ GigE and USB 2.0)



The LightSpeed 1000 is our new dual OC3 / 12 STM1 / 4 PCI-Express card for protocol analysis and emulation of ATM, POS, RAW, and Ethernet traffic. The card also sports 2 GigaBytes of DDR2 RAM, a GigE, and a USB 2.0 interface making this card one of the most versatile and powerful cards in GL's repertoire. LightSpeed 1000 comes with software for overall monitoring, BERT, emulation, and protocol analysis with a price tag that compares very favorably with similar test instruments at 3 times the price.

Multiple cards are possible in a rack PC for analysis of 4 or more signals simultaneously. When LightSpeed 1000 is enclosed, the USB 2.0 interface is used to connect with a Notebook PC. The GigE port provides independent Ethernet testing at wirespeed for applications such as BERT and RFC 2544. A unique feature of the card is the capability to capture and transmit at wirespeed to/from hard disk on all interfaces.

Main features

- Ability to capture to disk at full rate in both directions without error. This permits detailed offline analysis that is not possible with other test instruments. Capture is possible on both optical ports and the single Ethernet port. Triggered and filtered capture is also possible.
- Wirespeed BERT over ATM, POS, and RAW formats on both ports simultaneously
- Complex and flexible filtering options: Sixteen 128 bit independently applied filters, both ports, 128 bit user defined mask per filter, AND/OR Boolean expressions, include and exclude conditions
- Hardware based precise time stamping of cells / packets with 10 nsec resolution, 1 ppm accuracy
- Portability thru a USB 2.0 Interface
- Single Mode or Multi Mode Fiber SFP support
- High performance 4x PCIe compliant interface
- Onboard SODIMM memory (DDR2) – up to 2 Giga bytes
- Provides external LEDs for LOS, LOF alarms for visual inspection. Also supports User defined LED that can be configured by the user
- Flexible DMA ring buffer architecture to read/write cells and packets at wire-speed
- Multiple cards per system for super high capacity monitoring and test system
- Hardware independent of higher level protocol for easy adaptation of future protocols

For more details, please visit our web page <http://www.gl.com/OC3-OC12-analysis-emulation-card.html>.



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POS Mode – Packet Over SONET / SDH

POS, or Packet over SONET / SDH at OC3 / 12 and STM1 / 4 is supported at full rates over dual interfaces. Access, capture, analysis, and emulation of PPP and HDLC, all carrying IP traffic in real-time makes this card useful to many applications including Routing, Deep Packet Inspection, and other Internet traffic applications.

POS Applications

- **POS Protocol Analysis** with PPP and HDLC at wirespeed
- **POS Tx / Rx Test** – an emulation and test capability tool that transmits test packets and checks same on receive
- **POS BERT** – support for the following PRBS Patterns: $2^9 - 1$, $2^{11} - 1$, $2^{15} - 1$, $2^{20} - 1$, $2^{23} - 1$, $2^{29} - 1$, $2^{31} - 1$, All one's, All Zero's, Alternate ones and zeros, user defined pattern of lengths from 2 to 32 bits, invert and non-invert selections, single bit error insertion, error insert rate from 10^{-1} to 10^{-9} , status for pattern sync, bit errors counters, and packet rate and packet gap configuration options, configurable header lengths and header information
- Wirespeed capture of POS packets to hard disk on both ports simultaneously; Filtering, and time stamping of packets
- Alarms and Error Logging

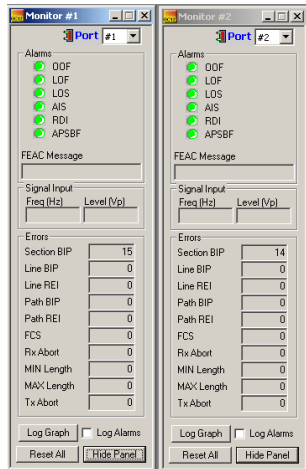


Figure: Alarm and Error Monitor

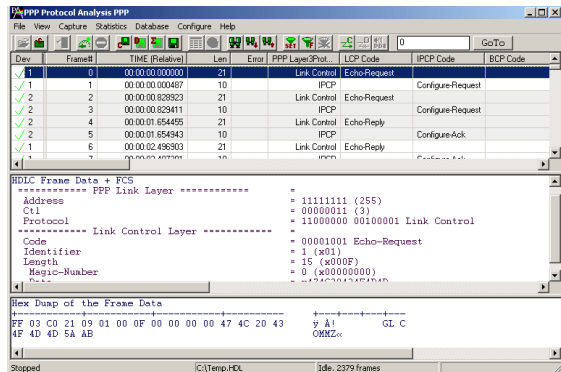


Figure: POS Protocol Analyzer

ATM Mode – Asynchronous Transfer Mode

ATM at OC3 / 12 STM1 / 4 is supported at full rates over dual interfaces. Access, capture, analysis, and emulation of ATM cells at wire-speed make this interface capability applicable for wide ranging next generation networks.

ATM Applications

- **ATM Protocol Analysis** for AAL2 and AAL5
- **ATM Tx / Rx Test** - an emulation and test capability that transmits test cells and checks same on receive
- **ATM BERT** - support for the following PRBS Patterns: $2^9 - 1$, $2^{11} - 1$, $2^{15} - 1$, $2^{20} - 1$, $2^{23} - 1$, $2^{29} - 1$, $2^{31} - 1$, All one's, All Zero's, Alternate ones and zeros, user defined pattern of lengths from 2 to 32 bits, invert and non-invert selections, single bit error insertion, error insert rate from 10^{-1} to 10^{-9} , status for pattern sync, bit errors counters, and cell rate and cell gap configuration options
- **Other ATM BERT options** – 52 byte ATM cell (without HEC) and 53 byte ATM cell (with HEC), HEC error insertion, on receive filtering is provided for idle cells, GFC, VPI, VCI, CL, and PT cells, statistical details for total cells, valid cells, idle cells, filtered cells, and filtered out cells
- Wirespeed capture of ATM cells to hard disk on both ports simultaneously, filtering, and time stamping of cells
- Alarms and Error Logging

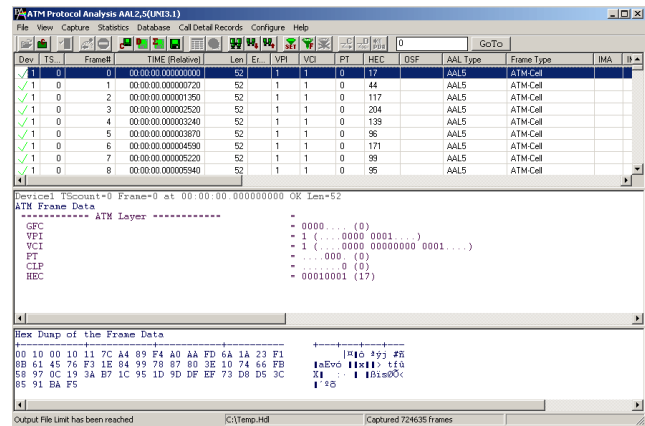


Figure: ATM Protocol Analyzer

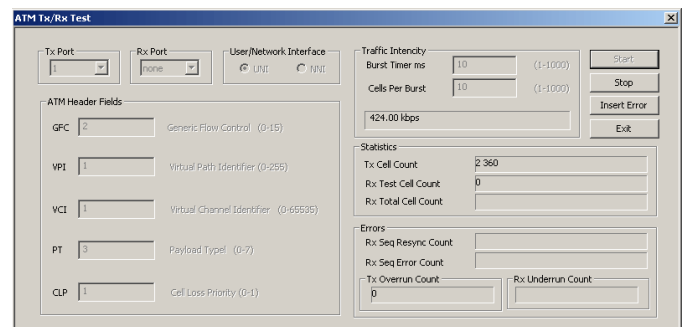


Figure: ATM Tx/Rx Test

RAW or Transparent Mode

Raw or transparent mode allows direct access to the SONET / SDH payload for BERT, data transmit and receive applications. Current applications include:

- **RAW BERT** - support for the following PRBS Patterns: $2^9 - 1$, $2^{11} - 1$, $2^{15} - 1$, $2^{20} - 1$, $2^{23} - 1$, $2^{29} - 1$, $2^{31} - 1$, All one's, All Zero's, Alternate ones and zeros, user defined pattern of lengths from 2 to 32 bits, invert and non-invert selections, single bit error insertion, error insert rate from 10^{-1} to 10^{-9} , status for pattern sync, and bit errors counters
- Wirespeed capture of raw data to hard disk on both ports simultaneously
- Alarms and Error Logging

Record / Playback Data Application

This permits the user to transmit and / or capture packets from/to a file with GL's OC3 / OC12 Analyzer. ATM, POS or RAW files can be transmitted and captured continuously (without loss) over SONET line. The analyzer can capture (record) the received data into a DAT file. It can also transmit (playback) already captured DAT file over SONET.

Record Packets to File (Raw)

- Capture incoming packets into a DAT file
- Limited data capture option up to user selected size (Mega bytes/ number of packets) or manually stop the capture

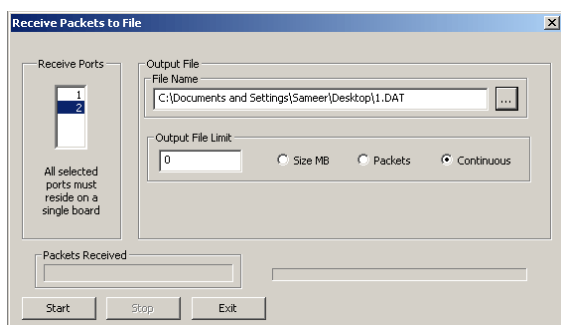


Figure: Receive Packets to File

Playback Packets (Raw file)

- Transmit ATM, POS or RAW file over SONET
- Transmit without any size constraint
- Continuous playback or EOF playback

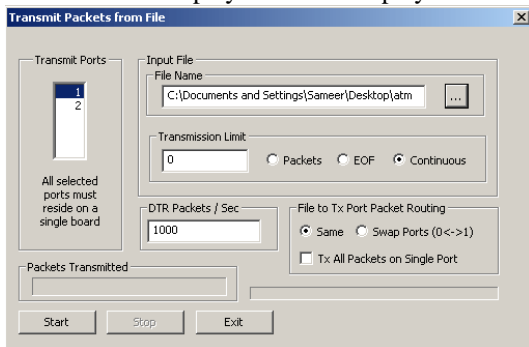


Figure: Playback Packets from File

Specifications

Interfaces:

- 2 x OC3 / STM1 / OC12 / STM4
- 1 x Gigabit Ethernet
- Single Mode or Multi Mode Fiber SFP support with LC connector

Protocols:

- RFC 2615 compliance
- POS compliance specs needed

Tx Clock:

- Internal or Recovered

Bus Interface:

- PCIe Specification 1.2 Compliant
- USB 2.0

Power and Dimensions:

- +12 volts, 3.5 Amps
- 4.2" x 9.2"

Buyers Guide:

[LTS100](#) - Dual OC3 / 12 and STM1 / 4 PCI Express Card

[LTS105](#) - Portable Dual OC3 / OC12 Unit

OC3 / STM1 Related Software

[LTS200](#) - OC3 / STM1 ATM Monitor, BERT, Tx/Rx Test, RAW

[LTS201](#) - OC3 / STM1 POS Monitor, BERT, Tx/Rx Test, RAW

[LTS202](#) - OC3 / STM1 ATM and RAW Record / Playback

[LTS203](#) - OC3 / STM1 POS and RAW Record / Playback

[LTS204](#) - OC3 / STM1 ATM Protocol Analysis

[LTS205](#) - OC3 / STM1 POS Protocol Analysis

[LTS206](#) - OC3 / STM1 UMTS Analysis

OC12 / STM4 Related Software

[LTS300](#) - OC12 / STM4 ATM Monitor, BERT, Tx/Rx Test, RAW

[LTS301](#) - OC12 / STM4 POS Monitor, BERT, Tx/Rx Test, RAW

[LTS302](#) - OC12 / STM4 ATM and RAW Record / Playback

[LTS303](#) - OC12 / STM4 POS and RAW Record / Playback

[LTS304](#) - OC12 / STM4 ATM Protocol Analysis

[LTS305](#) - OC12 / STM4 POS Protocol Analysis

[LTS306](#) - OC12 / STM4 UMTS Analysis

Related Hardware

DDR2 Options - 512 MB, 1GB, 2GB

SFP Options -

Fiber Cables, Fiber connectors

OC3 /12 and STM1 / 4 Monitor Parts