GL CORE PRODUCTS

...Global Leader in Telecom Test And Measurement Solutions

Telecom Test Solutions

IP and Ethernet Simulation & Analysis
All Protocols over IP, TCP, UDP
Signaling, Traffic, Voice & Data QoS
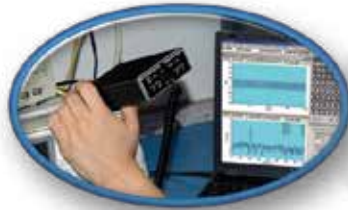10 GigE, MPLS, VLAN, SLA

Wireless Simulation & Analysis
LTE, VoLTE, UMTS, GSM, TRAU, GPRS
Wireless Drive Testing, GPS Mapping
Signaling, Traffic, Voice & Data QoS

TEST
ANALYZE
MONITOR

TDM Simulation & Analysis
Signaling & Traffic
T1, E1, Analog, FXO, FXS

Network-wide Monitoring Solutions
Signaling & Traffic
VoIP, TDM, Wireless

Voice, Fax, Data, & Video Quality
IP, TDM, PSTN, 3G 4G,2G, Bluetooth
PESQ, POLQA, PAMS
Data Testing over Wired and Wireless

High Speed Telecom Lines
OC-3, OC-12, STM-1, STM-4, T3, E3
Channelized & Unchannelized

Contents

TDM Hardware & Software Products
OctalXpress and QuadXpress T1E1 PCIe Cards

FTE001　　**QuadXpress T1 E1 (Main Board)**
　　　　　　　Quad Port T1 E1 Main Board w/PCIe (x1) Interface - requires ETA00x or EEA00x licenses

ETE001　　**QuadXpress T1 E1 (Daughter Card)**
　　　　　　　Quad Port T1 E1 Daughter Board - Requires FTE001 Main Board and ETA00x or EEA00x

ETA002　　**Two Port License for T1**

ETA003　　**Timeslot Delay Loopback for T1**
　　　　　　　Driver Implementation for Delay and Channel Loop back (up to 192 timeslots, 0 to 4000 ms/channel)

ETA004　　**Four Port License for T1**
ETA008　　**Eight Port License for T1**
ETAxxx　　**Optional Software Apps for T1**
EEA001　　**T1 Basic Software – required for T1**

EEA002　　**Two Port License for E1**
EEA003　　**Timeslot Delay Loopback for E1**
　　　　　　　Driver Implementation for Delay and Channel Loopback (up to 192 timeslots, 0 to 4000 ms/channel)

EEA004　　**Four Port License for E1**
EEA008　　**Eight Port License for E1**
EEAxxx　　**Optional Software Apps for E1**

T1E1 Quad and Octal Card

tScan16™ Express Card

TTE001t **Scan16 Express Card**
16 port T1 E1 Receive Only Card – w/ GL Windows software and optionally Linux API, requires TTE002

TUT001 **Basic Software License for T1**
TUE001 **Basic Software License for E1**
TUTxxx **Optional Software Apps for T1**
TUExxx **Optional Software Apps for E1**
Optionxx150al Software Applications for E1, 1x per 16 TS, 2x per 32 TS…, see Note 3

TTE002 **Cable and Breakout Box for 16 RJ-48 Interfaces**
TTE003
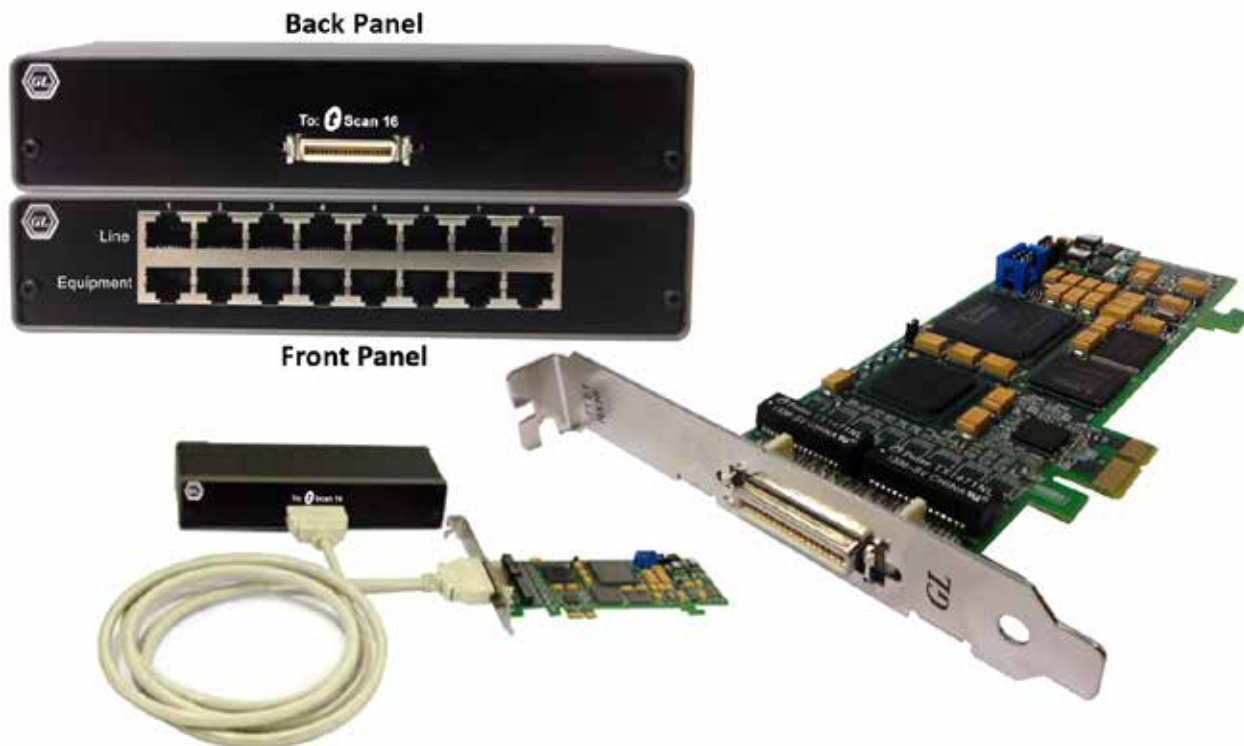
tScan16™ Express Card and breakout box

For more information, please visit https://www.gl.com/16-port-t1-e1-analysis-pcie-card-tscan16.html

Dual T1 E1 Express PCIe Card

XTE001   **Dual T1 E1 Express Card**
Dual T1 E1 Card w/PCIe (x1) Interface – supports pulse mask and jitter functions; requires XUT001 or XUE001 for each card; special apps licensed per system

XUT001   **Basic T1 Software**
w/Basic Software for WIN 10

XUE001   **Basic E1 Software**
w/Basic Software for WIN 10

For more information, please visit https://www.gl.com/dual-t1-e1-pcie-boards.html

Dual T1/E1 Express PCIe Card

tProbe™ - T1 E1 VF, Serial Data Communications Analyzer

PTE001   **tProbe™ Analyzer (Dual Ports)**
Portable USB T1 E1 Unit - supports pulse mask and jitter functions; requires PTA001 or PEA001 for each unit; special apps licensed per system

PTA001   **T1 Software for tProbe™**
PEA001   **T1 Software for tProbe™**
w/Basic Software for WIN 7 / 8.1 / 10

SA000c   **High Stability Internal Clock Option**
+/- 1 ppm Internal Clock

PTE015   **w/ 2Wire FXO and FXS Optional Board**
2Wire FXO FXS Board – T1 and E1 – uses xx600, requires xx624 (MAPS FXO FXS)

tProbe™ Analyzer (Dual Port)
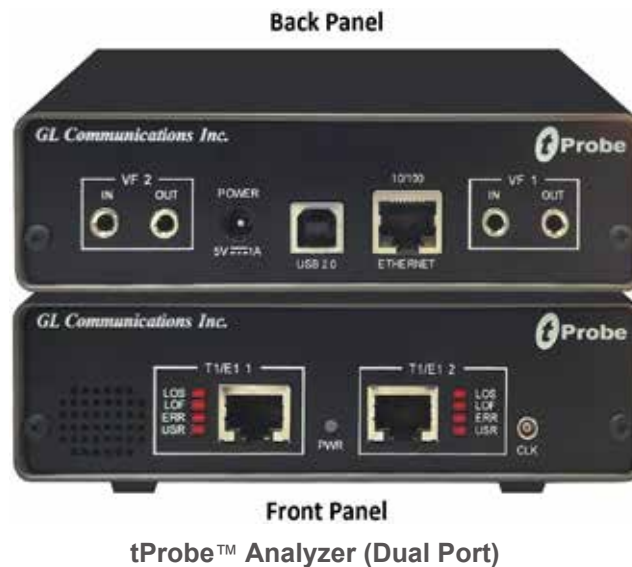
PTE025   **tProbe™ with Data Communications Optional Board**
Data Communications Board for Interfaces RS-232, RS-449, RS-442, EIA-530, EIA-530A, V.35, NRZI, Manchester (IEEE, GET, Diff, FM0, FM1)w/Basic Software for WIN 7 / 8.1 / 10 includes BERT, Enhanced BERT, Error Insertion, Tx/Rx Loopback, Precision Delay Measurement, Monitor Rx Data for Sync 2.4 KHz to 16.384 MHz and Async 300Hz to 115.2 KHz

tProbe™ w/ Datacom Analyzer Board

Datacom Cable and Accessories

SA600   **1S0015 Cable DB15M / DB15M, 6'**
For use with X.21

SA601   **2C0001 Cable, DB25M/DB25F, 1' reversal**
For use with RS232, RS530 and V.24 as DCE

SA602   **2S0001 Cable, DB25M/DB25M, 6'**
For use with RS232, RS530 and V.24

SA603   **3A0001 Cable, DB25M/34M, 6'**
For use with V.35

SA604   **3S0001 Cable, Bantam/Bantam, 6'**
For use with T-1

SA605   **4A0001 Cable, DB25M/DB37M, 6'**
For use with V.35

SA606   **6S0001 Cable, BNC/BNC, 6'**
For use with T-3/E-3 and E-1

SA607   **6S358A Cable, BNC to 358A, 6'**
For use with T-3

SA608   **6S440A Cable, 440A to 440A, 6'**
For use with T-3/E-3

SA609   **6A440B Cable, BNC to 440A, 6'**
For use with T-3/E-3

SA610   **7A0002 Cable, Dual Bantam to RJ48, 6'**
For use with T-1/E-1

SA611   **7A0003 Cable, Bantam to BNC, 6'**
For use with T-1/E-1

SA614   **K00002 Cable, Console - modular RJ11 to DB9 pin connector**
For Laptop;

SA615   **A440BN Cable, Adapter 440 to BNC, 2.25"**
For use with SA606;

Analog Phone Simulator (APS)

MAPS™ APS is a high capacity Analog 2-Wire FXO/FXS or 4-Wire E&M Bulk Call Generator that performs test on Central Office, PBX, Telephone Adapter, Gateway or other telecommunications equipment.

For more information, please visit https://www.gl.com/2Wire-Analog-and-4Wire-EandM-Bulk-Call-Generator.html.

APSCB-24   **24-Port Analog Phone Simulator, 115V P/S**

24-Port Analog Phone Simulator

APSCB-48   48-Port Analog Phone Simulator, 115V P/S

48-Port Analog Phone Simulator

TDM Hardware and Software Products

APSCB-96   **96-Port Analog Phone Simulator, 115V P/S**

MAPS™ APS 96 Ports

5U

1U
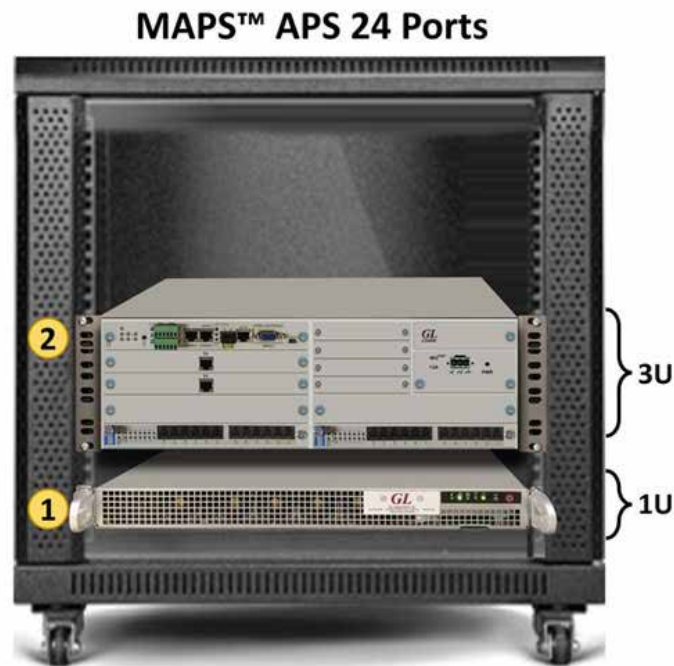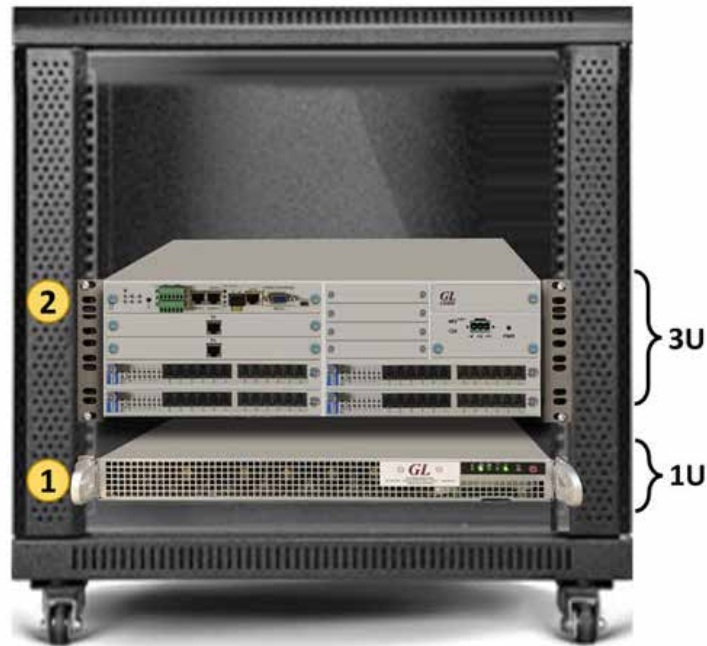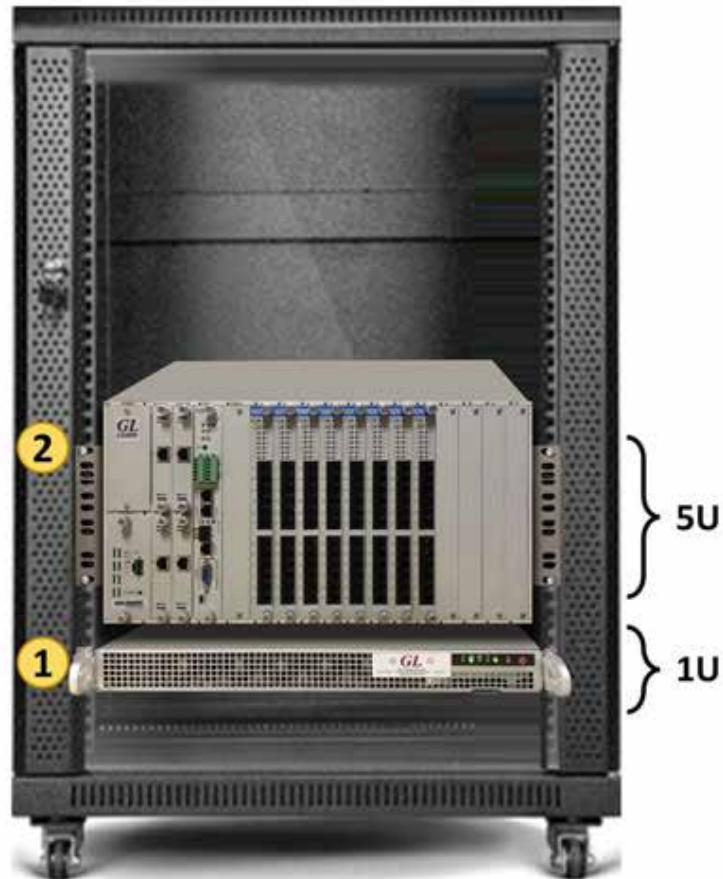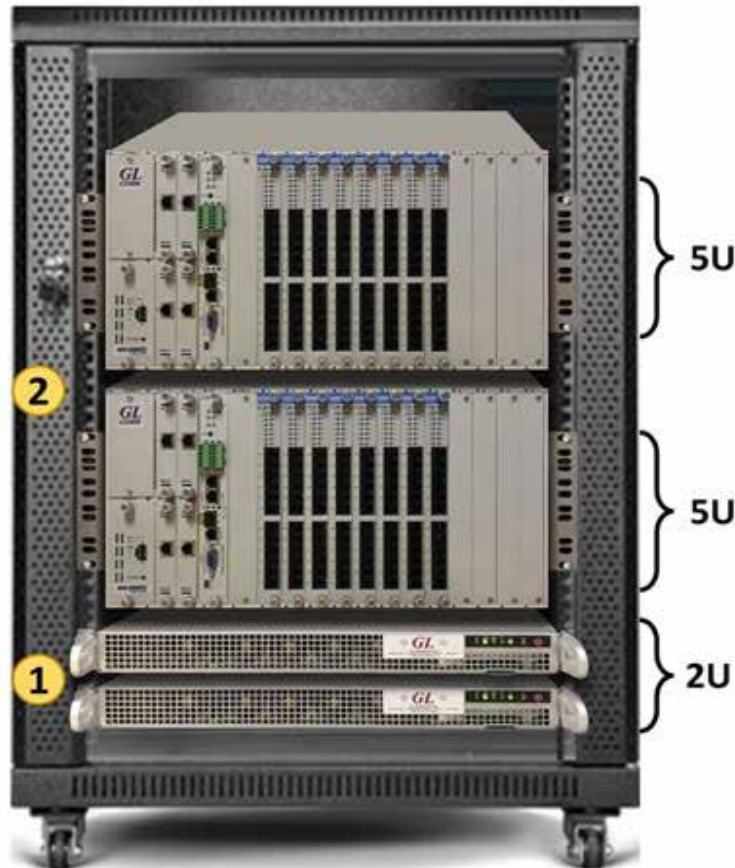
1 MAPS™ APS Server (Optional VQT Analysis)

2 APSCB-96 x 1

96-Port Analog Phone Simulator

GL Communications Inc.

APSCB-192   192-Port Analog Phone Simulator, 115V P/S

192-Port Analog Phone Simulator

2W APS – FXO or FXS or Combination

Require RJ11 cables, T1 crossover cables, requires additional MAPS CAS Software, Dual Express/Quad/Octal Cards, and more.

APSCB-24-2W **24-Port 2W Analog Phone Simulator (APS), or Central Office Switch Simulator**

APSCB-48-2W **48-Port 2W Analog Phone Simulator (APS), or Central Office Switch Simulator**

APSCB-72-2W **72-Port 2W Analog Phone Simulator (APS), or Central Office Switch Simulator**

APSCB-96-2W **96-Port 2W Analog Phone Simulator (APS), or Central Office Switch Simulator**

APSCB-120-2W **120-Port 2W Analog Phone Simulator (APS), or Central Office Switch Simulator**

4W APS – FXO or FXS or Combination

Require special RJ45 cables for 4W E&M and T1 crossover cables; requires additional MAPS CAS Software, Dual Express/Quad/Octal Cards, and more.

APSCB-24-4W **24-Port 4W Analog Phone Simulator (APS), or Central Office Switch Simulator**

APSCB-48-4W **48-Port 4W Analog Phone Simulator (APS), or Central Office Switch Simulator**

APSCB-72-4W **72-Port 4W Analog Phone Simulator (APS), or Central Office Switch Simulator**

APSCB-96-4W **96-Port 4W Analog Phone Simulator (APS), or Central Office Switch Simulator**

mTOP™ Integrated Test Platforms
Refer to mTOP™ Platforms page for more details.Basic Applications for T1 E1 Analyzer

Basic Applications for T1 E1 Analyzer
Monitoring Applications

Monitor T1/E1 Status
Monitor line sync loss, HDB3 violation, carrier loss, frame error, distant MF, alarm indication signal (AIS), ES, and so on.

Four Wire VF Interface with Drop & Insert
Control the gain of the signal, feed the PCM signal on a timeslot to the VF Out jack or to an onboard speaker.

Clock options: Internal, External, & Recovered
Internal clock using an internal oscillator, recovered clock using the clock derived from the received signal, and external clock as provided at the SMB input.

Connection Options: Terminate, Bridge, Monitor
Input signal (the signal connected to the "T1/E1 In" jack) may be terminated using impedance, monitored, or bridged depending on user requirements.

Bytes Values Display for all time slots
Displays data values for each time slot in HEX data format.

Binary Byte Values Display for all time slots
Displays the data values for each time slot in binary data format.

Monitor signaling bits
Displays signaling bits associated with each timeslot are displayed in real-time.

Power Level Display for all time slots
Displays the rms (root-mean-square) value of the digital codewords (after expansion from μ-law or A-law) for each timeslot continuously in dBm.

DC Offset Display for all time slots
Displays DC offsets for all timeslots.

Frequency Display for all time slots
Displays signal frequency in each timeslot continuously.

Multiframe Byte Display
Permits viewing of a complete multiframe. For T1 systems, twelve (12) frames are displayed per multiframe in D4 (193S) framing format, and twenty-four (24) frames in ESF (193E) framing format. For E1 systems, 16 frames are displayed per multiframe.

Real Time Multiframe Monitoring
Permits viewing of multiframes in real-time. The data is refreshed for about every second.
Real Time Bitmap Monitoring
Permits a graphical view of complete multiframes as a real-time bitmap.

Time Slot Byte Display
Displays the timeslot value for about '1' second for a desired timeslot.

ASCII Time slot Display
Permits viewing of real-time ASCII events that are present on the T1 or E1.

Real Time Oscilloscope Display of DS0
PCM codes (amplitude of the incoming signal) of any selected timeslot are displayed in real-time graphically as a function of time.

Real Time Power Spectral Display of DS0
Permits viewing the data received on a specified timeslot spectral domain (spectral amplitude Vs frequency).

Audio Monitoring
Allows the control of VF output (speakers) of all T1/E1 cards connected to a PC under a single program.

Active Voice Level Monitoring
Computes the Active Voice Level according to the ITU-T P.56 specification, Method B.

Intrusive Testing Applications

Full / Fractional T1/E1 BERT with Drop & Insert
Generates/detects unframed, framed, and fractional data that are defined in Pseudo Random Bit Sequence (PRBS).

Enhanced Multi Channel Bit Error Rate Tester (Supported only in USB and HD T1/E1 analyzer units)
Measures the correctness of data received on T1/E1 lines according to the repetitive pattern file for a given transmission.

Transmit Tone
Transmits a tone of any frequency (within 5 Hz to 4000 Hz) into one or more timeslots simultaneously.

Transmit Gaussian Noise
Transmits Gaussian Noise into one or more timeslots simultaneously (the power level of the noise is adjustable from -140 dBm and up to a maximum of +3.17 dBm).

User-defined Multiframe
Users can define the contents of a multiframe for repeated transmission.

Signaling Bits
Transmits the signaling bits into one or more timeslots simultaneously.

Precision Delay Measurement
Measures the Round Trip Delay of a system.

Tx_Rx Loopback
This application is for diagnostic purposes only. It loops all the receive data from all timeslots back to the transmitting port.

Error Insertion
Permits single, fixed, automatic, and random error insertion into the incoming bit stream. Bulk delay is an added feature in Error insertion application (applicable only to USB Analyzers) that allows users to apply delay on the entire T1/E1 trunk (full multi-frame) of 1.544Mbps (T1) pipe or 2.048 Mbps (E1) pipe.

Basic Client/Server Scripted Control Software (XX600)
Precise & Sequential control of T1 or E1 Lines – Client/Server – Uses TCP/IP, included with basic software

Dual VF Tx Rx (XX605 only for tProbe™)
User Friendly GUI for analog / digital audio Tx/Rx functions – included with basic software, all necessary options except xx626

XX010	**API Development Software Toolkit (Windows®)**	
	Develop applications for T1/E1 Products for Windows Platforms ; Requires C++ programming skills.	
XX011	**API Development Software Toolkit (Linux)**	
	Develop applications for T1/E1 Products for Linux Platforms ; Requires C++ programming skills	
XX012	**Pulse Shape & Jitter Generation/Measurement**	
	Easy, accurate, visual pulse shape and jitter generation / measurement of T1 E1 signals (tProbes, Express platforms); included with basic software	
XX017	**Real-time T1/E1 Multi-Channel Audio Bridge**	
	Streams audio to/from TDM channel(s) from/to sound device(s) in a PC system; supports A-law, u-law, G.726 (16, 24, 32, 40kbps), 722; included with basic software	
XX022	**DTMF/MF/MF-R2 Detector and Generator**	
	Allows to transmit and receive DTMF/MF/MFC-R2 Digits with Detailed Analysis. included with basic software	

XX023　　**E1 µ-Law Software or T1 A-law Software**
Supports operation of T1 Systems with a-Law and E1 Systems with µ–Law. included with basic software

XX024　　**Real-time Strip Chart**
Provides a real-time display of calls with synchronized PCM and signaling display.included with basic software

XX050　　**Signaling Bits Recorder Software**
Records / Displays ABCD Signaling Bits – All Channels. included with basic software

XX051　　**Synchronous Trunk Record Playback**
Synchronous Record, Playback, Search, of live T1 E1 traffic on many T1 E1 trunks for mission diagnostics, analysis, retrieval, and storage

XX672　　**T1 E1 Rx Superframe / Multiframe Streaming over UDP**
Permits UDP streaming received E1 multiframes and alarms or T1 extended superframes and alarms

STE050　　**Sample Traffic Files**
Includes various Fax, Modem, Digits, Voice and Binary Traffic files for voice, fax, data, and tone testing of networks.

Special Applications for T1 E1 Analyzer

XX018　　**Multi-Channel BERT Software**
Supports simultaneous and independent BERT's on many sub-channels, timeslots, and hyper-channels.

XX019　　**Transmit / Receive File Utility**
Includes a Command-line utility for file transmit and receive over T1/E1; a similar versatile GUI application is also provided.

XX020　　**Record Playback Software**
File Capture & Transmit over T1 E1; Automated capture/transmit and automated continuous capture; includes STE040 Mux / De Mux Software

STE040　　**Multiplex / Demultiplex Software**
Processing Software for T1/E1 Tx / Rx Files – requires dongle; included with xx020 Record / Playback Software

XX021　　**FDL Software for ESF (T1 Only)**
Supports transmit and capture over ESF links.

OLV021　　**Offline FDL Analysis Software for ESF (T1 Only)**
Offline FDL Analysis Software for T1 ESF Links

Call Capture and Analysis Software Options

XX031　　**Enhanced T1/E1 Call Capture/Analysis Software**
CCA with traffic based call triggering. Trigger and capture on specific traffic types e.g. fax, specific modems, voice, and tones such as dial, busy, ring back, royalty, requires license for XX030

CDR032　　**Call Data Record**
Provides detailed and complete call information for every call including detailed signaling, alarm, and voiceband events. Requires and works with Multiple Call Capture xx031, or PacketScan PKV100, or PPP/ML-PPP xx135 and xx136. Also requires VBA032 and VBA036; requires dongle(s)

Windows Client/Server Software Options

XX606   **Pulse Shape & Jitter Measurement**
Pulse Shape and Jitter Measurement Data of T1 E1 signals (tProbes only), included with basic software

XX610   **w/ Transmit and Receive File capability**
Provides ability to Tx Rx Files directly over T1/E1 lines – server based; ability to Tx Rx data directly from client;

XX616   **T1 E1 WCS Client Python Module**
Permits Python client development for T1 E1 platforms;

XX617   **T3 E3 WCS Client Python Module**
Permits Python Client development for T3 E3 platforms

XX620   **w/ DTMF/MF/MFC-R2 + answer/place call capability**
Tone and Dual Tone detection and generation and CAS signaling capability; included with basic software

XX625   **w/Channel Associated Signaling Simulator**
Special Client simulates all CAS protocols, including wink-start, loop-start, ground start, R1, MFC-R2, etc. (requires xx610, xx620, and xx630) also available as a remote client with dongle

XX626   **w/ SS1 Signaling Analyzer and Dialer**
SS1 Signaling analysis and dialer for FAA circuits; includes xx610, and xx630

XX629   **w/ISDN Emulation**
Emulates call setup and teardown using ISDN protocol - all variants; includes xx640, recommended xx610 and xx620 for traffic generation and reception

XX630   **w/ DSP Capability**
Permits complex DSP Operations;

XX631   **w/Dynamic DSP Capability**
Permits time varying DSP Operations, requires xx630

XX634   **w/ High Throughput HDLC Tx/Rx Test**
Allows HDLC Simulation with large number of hyper-channels, channels, and sub-channels, with impairments.

XX635   **w/ High Throughput PPP Tx/Rx Test**
PPP Emulation, requires xx634

XX636   **w/ High Throughput MC ML-PPP Tx/Rx Test**
Performs MC ML-PPP and NCP Emulation-including Client GUI for MCML-PPP Emulation-requires xx634 & xx635

XX640   **w/ HDLC Encode/Decode & Remote Capture**
Allows sending and receiving HDLC frames from files;

XX643   **w/ MTP2 Emulation**
Emulates endpoints using MTP2 protocol stack for building signaling systems for validation and testing.

XX646   **w/ TRAU Frames Tx & Rx with error testing**
Continuity testing within payload over multiple TRAU Traffic Channels.

XX650   **w/ File based HDLC Record/Playback over SA-bits**
Supports receiving and transmitting of HDLC frames on TS0 special bits in *.hdl file format– E1 only.

XX660   **w/ File based Record/Playback FDL**
Supports receiving and transmitting over ESF - T1 only

XX665   **MAPS TCAP (ANSI) Emulation**
Emulates ANSI TCAP Protocol for CNAM, LNP & 800 Calling

XX670   **w/Multi-Channel Rx BERT**
Supports simultaneous Rx BERT on many timeslots and hyper Channels, requires xx610.

XX680   **w/T1E1 Traffic Classifier**
Analyzes and classifies various traffics such as voice, fax, data, tones (dial tone, ring-back tone, busy tone etc) as well as identify dialing digits and other events happening on a T1/E1 network; requires dongle

XX690   **w/ SS7 Protocol Decode Agent**
Client application to monitor and decode SS7 Links, filters based on user specified protocol parameters, builds CDRs, 069 streams over TCP/IP to remote site; specialized client required at remote site;.

XX691   **w/ ISDN Protocol Decode Agent**
This is a console client application that monitors ISDN Links,decodes multiple ISDN protocol standards, filters, user specified protocol parameters, builds CDRs, streams over TCP/IP to remote site; specialized client required at remote site.

XX653   **ATM-SSCOP Emulation**
SSCOP Emulation over ATM

XX654   **Inverse Multiplexing over ATM (IMA) Protocol Emulation**
Emulates Inverse Multiplexing over ATM (IMA) over multiple T1s or E1s; includes GUI.

XX655   **w/ Multi-link Frame Relay Emulation**
Emulates, transmits, and receives multilink frame relay test traffic; requires xx634

TDM Hardware and Software Products

MAPS™ Protocol Simulation & Conformance for TDM

XX624 **MAPS™ FXO FXS (only for tProbe™)**
Emulates 2wire FXO / FXS interfaces, requires PTE015; includes xx620, and xx630

XX649 **MAPS™ – SS7 (ISUP and MAP) Emulation**
SS7 Protocol Emulation with detailed control, requires xx610 and xx620 for traffic generation; xx643 is included; Also available as a remote client with dongle

XX647 **MAPS™ – SS7 / ISUP Conformance Scripts**
Includes SS7 / ISUP Protocol Conformance Scripts; requires xx649

XX648 **MAPS™ – ISDN Emulation**
ISDN Protocol Emulation with detailed control, includes xx661 for LAPD Emulation, requires xx610 and xx620 for traffic generation; Fax emulation supported (Optional - Refer XXFT0)

XX642 **MAPS– ISDN Conformance**
ISDN Protocol Conformance Test Scripts, includes xx661

XX661 **LAPD Server**
Emulates endpoints using LAPD protocol stack for building signaling systems for validation and testing

XX662 **LAPD Conformance**
LAPD Conformance testing as per ITU / ISO specifications, requires xx634

XX651 **MAPS™ CAS Emulation (may require CB)**
Special Client simulates all CAS protocols, including wink-start, loop-start, ground start, R1, MFC-R2, etc. (requires xx610, xx620, and xx630); Fax emulation supported (Optional - Refer XXFT0); also available as a remote client with dongle. May require Channel Bank (APSCB-24 or APSCB-48) for 2wire emulation

XX652 **MAPS™ – MC ML-PPP Protocol Conformance Scripts**
Includes MC ML-PPP Protocol Conformance Scripts; includes xx634

XX656 **MAPS – INAP Emulation**
ITU SS7 INAP CS1 CS2 Emulation

XX692 **MAPS™ – GSM A Interface Emulation**
GSM A Interface Emulation with detailed control, includes xx643; requires xx610 and xx620 for traffic generation

XX693 **MAPS™ – GSM Abis Interface Emulation**
GSM "Abis" Interface Emulation with detailed control, includes xx661 and requires xx646 for TRAU Tx Rx

XX694 **MAPS™ MAP Emulation**
MAP Protocol Support for interfaces B,C,D, E, F, G, and H

XX695 **MAPS™ SS7 BICC Emulation**
Bearer Independent Call Control (BICC) Emulation

XX682 **MAPS – IUP Emulator**
BT (UK) IUP Protocol Emulation, includes xx643, xx610 and xx620 required for traffic generation; Fax emulation supported (Optional - Refer XXFT0);

XX696 **MAPS™ SS7 CAP Emulation (CAMEL App Part)**
Customized Application for the Mobile network Enhanced Logic - CAMEL Application Part (CAP) includes xx643

GL Communications Inc.

XX683   **GPRS Gb Interface Emulator**
Gb Interface emulation over Frame relay. Simulates BSC & SGSN; Requires ETH103 for Traffic

XX697   **MAPS™ BSC to SGSN Emulation over E1**
BSC to SGSN Emulation over E1 (at BSC),

XX698   **MAPS™ SGSN to BSC Emulation over E1**
SGSN to BSC Emulation over E1 (at SGSN)

XX699   **MAPS – ANSI MAP Emulation**
IS41 Emulation on B, C, E, F, H, Q, and N interfaces xx634

TDM Hardware and Software Products

Protocol Analyzers and Emulators

XX090   **T1/E1 Real-time HDLC Decode/Store/Impair Software**
Decodes, Captures, Impairs HDLC frames from DSO timeslots.

XX095   **E1 Real-time SA Bit HDLC Analysis**
Transmits and captures HDLC frames from SA bits TS0.

XX100   **T1/E1 Real-time ISDN Protocol Analyzer**
Real-Time Monitoring of ISDN D-Channel with PDA.

XX101   **Call Capture Option for ISDN Protocol**
Call Capture Option for ISDN Protocol with PDA – requires xx100;

XX102   **T1 REAL-TIME DDS PROTOCOL ANALYZER**
Real-Time Monitoring / Capture of DDS Channels within T1 Lines supports 9.6, 4.8, 2.4 kbps channels in DS0-A and DS0-B for mats

XX105   **T1/E1 Real-time ISDN Protocol Emulator**
Real-Time Monitoring of V5.X Protocol with PDA

XX110   **E1 Real-time V5.x Protocol Analyzer**
Supports real-time monitoring, decoding, and analysis of V5.X.

XX111   **Call Capture Option for V5.x Protocol**
Call Capture Option for V5.x Protocol with PDA – requires xx110;

XX121   **Call Capture Option for SS7 Protocol**
Call Capture Option for SS7 Protocol with PDA – requires xx120;

XX120   **T1/E1 Real-time SS7 Protocol Analyzer**
Supports real-time monitoring, decoding, and analysis of SS7 (MTP, ISUP, TCAP, SCCP,INAP, IS-41, TUP, CAMEL,CAP)

XX130   **T1/E1 Real-time Frame Relay Protocol Analyzer**
Supports real-time monitoring, decoding, and analysis of Frame Relay protocol.

XX135   **PPP and ML-PPP Analyzer**
Analysis and Decode of ML-PPP and PPP protocols and other higher layer IP protocols

XX136   **PPP and ML-PPP Packet Analysis**
Realtime Packet Voice, Video, and Fax Analysis – includes SIGTRAN, PacketScan functions - but not specialized codecs; includes xx135, ROT

XX140   **T1/E1 Real-time GR303 Protocol Analyzer**
Supports real-time monitoring, decoding, and analysis of GR303 (TMC, EOC, CSC)

XX142   **T1/E1 Real-time CDMA2000 Protocol Analyzer**
Supports real-time monitoring, decoding, and analysis of A interfaces in CDMA2000 networks.

XX150   **T1/E1 Real-time GSM Protocol Analyzer**
GSM Protocol Analysis of the A Interface, the A-bis Interface, and the Gs, Ls, and Gb Interfaces. A-bis Interface decodes Radio Link Signaling (RSL) and voice bearers, but not the proprietary O&M interfaces.

⬡ **GL Communications Inc.**

XX151 **T1/E1 Real-time GSM Protocol Analyzer with Motorola Mobis Option**
To support the decode of Motorola specific A-bis implementation; requires xx150 (Proprietary decodes limited to few customers only)

XX153 **T1 E1 Real-Time TRAU Protocol Analyzer**
Decode/Analyse and extract compressed voice traffic between BTS and BSC, w/ PDA for Voiceband Analysis
TRAU Playback : TRAU Playback of pre captured TRAU files over T1/E1 timeslots.
TRAU Toolbox : TRAU Toolbox – Emulate voice over TRAU

XX155 **T1/E1 Real-time GPRS Protocol Analyzer**
Supports real-time monitoring, decoding, and analysis of Gn-Interface & Gb-Interface.

XX160 **T1/E1 Real-time ATM Protocol Analyzer**
Supports real-time monitoring, decoding, and analysis of ATM on T1/E1 lines

XX165 **T1/E1 Real-time UMTS Protocol Analyzer**
Supports real-time monitoring, decoding, and analysis of broadband wireless protocols

XX089 **Protocol Identifier**
Identifies protocols within T1/E1 whether the bandwidth occupied is full, fractional, timeslot, or sub-timeslot.

XX500 **Lucent Protocol Analyzers**
XX092 **CAS (Channel Associated Signaling) Analyzer**
Channel Associated Signaling Analyzer – includes xx610, xx620, and xx630; performs R1, MFC-R2, and other CAS Signaling Analysis

XX093 **Call Capture Option for CAS Protocol**
Call Capture Option for CAS Protocol with PDA – requires xx092;

XX162 **ATM BERT**
Performs ATM Bit Error Rate testing over virtual circuits.

OLV090 **Offline/ Remote HDLC Protocol Analyzer**
Decode and Analyze pre-captured HDLC files Remote Protocol Analyzer (includes WCS xx600, requires xx640)

OLV095 **Offline SA Bit HDLC Protocol Analyzer**
Decodes and analyzes pre-captured SA Bit HDLC files.

XX101 **Call Capture Option for ISDN Protocol**
OLV100 **Offline / Remote ISDN Analyzer**
Decode / Analyze pre-captured ISDN files Remote Protocol Analyzer (includes WCS xx600, requires xx640); Optional with PKV170 Network Surveillance Base Software for ISDN Decode / Analysis;

OLV101 **Call Capture Option for ISDN Protocol**
Call Capture Option for ISDN Protocol with PDA – requires xx100;

OLV110 **Offline / Remote V5.x Protocol Analyzer**
Decode / Analyze pre-captured V5.X files Remote Protocol Analyzer (includes WCS xx600, requires xx640)

OLV120 **Offline / Remote SS7 Protocol Analyzer**
Decode / Analyze pre-captured SS7 files.Remote Protocol Analyzer (includes WCS xx600, requires xx640); optional with PKV170 Network Surveillance Base Software for SS7 Decode / Analysis.

OLV130 **Offline / Remote Frame Relay Protocol Analyzer**
Decode / Analyze pre-captured Frame Relay files Remote Protocol Analyzer (includes WCS xx600, requires xx640), Note 2

TDM Hardware and Software Products

OLV135   **Offline PPP and ML-PPP Protocol Analyzer**
Decodes and analyzes pre-captured ML-PPP and PPP files.

OLV136   **Offline PPP and ML-PPP Packet Analysis**
Offline Packet Voice, Video, and Fax Analysis - includes SIGTRAN, PacketScan™ functions - but not specialized codecs.

OLV140   **Offline / Remote GR303 Protocol Analyzer**
Decode / Analyze pre-captured GR303 files, Remote Protocol Analyzer (includes WCS xx600, requires xx640)

OLV142   **Offline CDMA2000 Protocol Analyzer**
Decodes and analyzes pre-captured CDMA2000 files.

OLV150   **Offline GSM Protocol Analyzer**
Decodes/Analyzes pre-captured GSM files; optional with PKV170 Network Surveillance Base Software for GSM Decode / Analysis.

OLV151   **GSM Motorola Mobis Decode Option**
Motorola Mobis decodes, requires OLV150 (Proprietary decodes limited to few customers only)

OLV153   **Offline TRAU Protocol Analyzer**
Decodes and analyzes pre-captured TRAU files.

OLV155   **Offline GPRS Protocol Analyzer**
Decodes and analyzes pre-captured GPRS files.

OLV160   **Offline ATM Protocol Analyzer**
Decodes and analyzes pre-captured ATM files.

OLV165   **Offline UMTS Protocol Analyzer**
Decodes and analyzes pre-captured UMTS files.

OLV092   **Offline CAS Analyzer**
Offline CAS Analyzer; optional with PKV170 Network Surveillance Base Software for CAS Decode / Analysis;

DC007   **DCME Test & Analysis Software w/ Desktop PC**
DC008   **DCME Test & Analysis Software w/Portable PC**

TDM Network Monitoring Tools

PKV169   **Network Surveillance Lite Software**
Probe Level WebServer for - all Protocol analyzers (T1 E1, OC-3/STM-1, OC12/ STM-4, T3 E3, and PacketScan™), can be used only with Probe PC itself; requires respective real-time protocol analyzer licenses on the Probe PC based on the protocol selection CDR storage limited to 9GB.

PKV170   **Network Surveillance Base Software and Database (Perpetual License, Unlimited Users/Nodes)**
Centralized Database Engine and Client – works with Protocol Analyzers,
- includes database,
- requires either PKV180/PKV181
- requires protocol analyzer licenses and CDR licenses based on the protocol selection (all on the NetsurveyorWeb™ System) – see PacketScan™ CDR, and protocol options
- protocol analyzer license options available – PKV175, PKV172, PKV173, PKV176, PKV092, PKV174, PKV177, PKV178 (see below for details)

PKV171   **Network Surveillance Agent Toolkit**
Documentation, sample code (C++), and technical support for real-time connection to probes

◈ *GL Communications Inc.*

TDM Hardware and Software Products

PKV180   **Hardware Rack Server Appliance**
Dell PowerEdge 1U, R640, 1x Intel Xeon Silver 4210R (2.4 GHz, 10 Cores), 64 GB RAM, 500 GB SSD for OS, 2x1TB SSD, RAID 1, minimum, Redundant power, Windows Server 2019, Dual Port 10 Gig NIC
- Optional Dual Processor 2x Intel Xeon (additional cost for hardware),
- Additional storage based on traffic requirements (additional cost)

PKV181   **Hardware Portable System**
DuraPAC, 1x Intel Xeon Silver 4210R (2.4 GHz, 10 Cores), 64 GB RAM, 500 GB SSD for OS, 2x1TB SSD, RAID 1, minimum, Redundant power, Windows Server 2019, Dual Port 10 Gig NIC
- Pelican Case
- Optional Dual Processor (additional cost for hardware),
- Additional storage based on traffic requirements (additional cost)

PKV175   **T1 E1 Physical Line Monitoring Option for Network Surveillance**
Provides T1 E1 Physical Layer Status with Network Surveillance Solution; requires PKV170 at the central site

PKV172   **ISDN Call Detail Record (CDR) Option for Network Surveillance**
Provides ISDN/SIGTRAN CDR option for Network Surveillance Base Software (PKV170) - requires OLV100 at the central site.

OLV100   **Offline / Remote ISDN Analyzer**
Decode/Analyze ISDN option for Network Surveillance Software. Optional with PKV170 Network Surveillance Base Software for ISDN Decode / Analysis; Remote Protocol Analyzer (requires xx640)

PKV173   **SS7/SIGTRAN Call Detail Record (CDR) Option for Network Surveillance**
Provides SS7 (ISUP and MAP) /SIGTRAN CDR option for Network Surveillance Base Software - At central site - requires OLV120 for SS7 and requires PKV106 for SIGTRAN; At probe level requires respective protocol analyzer software and hardware.

OLV120   **Offline / Remote SS7 Analyzer**
Decode / Analyze SS7 option for Network Surveillance Software. Optional with PKV170 Network Surveillance Base Software for SS7 Decode / Analysis; Remote Protocol Analyzer (requires xx640)

PKV106   **Offline / Remote SIGTRAN Analyzer**
Decode / Analyze SIGTRAN option for Network Surveillance Base Software

PKV092   **CAS Call Detail Records (CDR) Option for Network Surveillance**
Provides CAS CDR option for Network Surveillance Base Software requires OLV092 at the central site, Decode/Analyze CAS Option for Network Surveillance Base Software – requires PKV170 and PKV092.

PKV174   **GSM (TDM or IP) & TRAU Call Detail Record (CDR) Option for Network Surveillance**
Provides GSM (TDM and IP) & TRAU (TDM) CDR option for Network Surveillance Base Software - At central site requires OLV150 for GSM and requires OLV153 for TRAU, OR requires PKV109 for GSM IP; At probe level requires respective protocol analyzer software and hardware.

OLV092   **Offline/Remote CAS Analyzer**
Decode/Analyze CAS Option for Network Surveillance software Optional with PKV170 Network Surveillance Base Software for CAS Decode / Analysis;
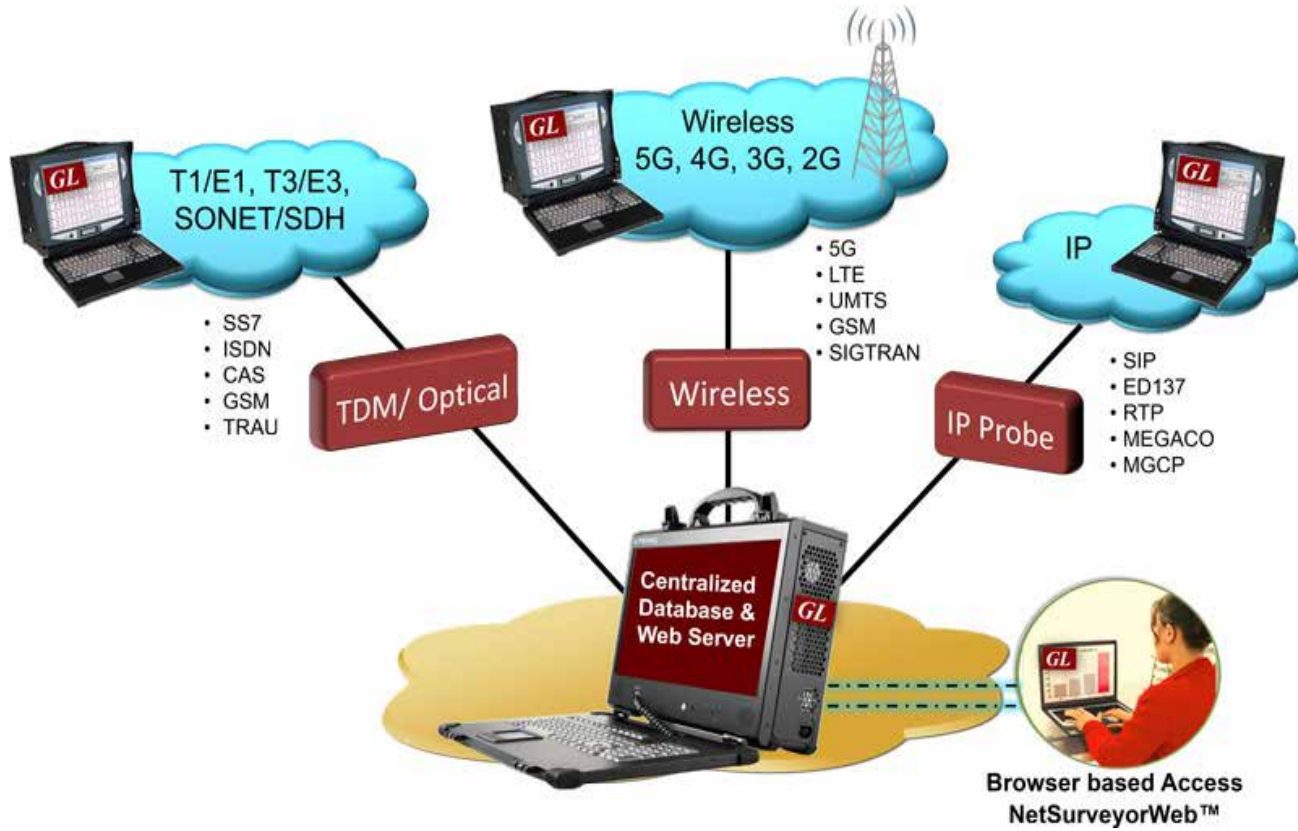
Network Surveillance

OLV150   **Offline / Remote GSM Analyzer**
Decode / Analyze GSM option for Network Surveillance Software. Optional with PKV170 Network Surveillance Base Software for GSM Decode / Analysis.

OLV153   **Offline / Remote TRAU Analyzer**
Decode / Analyze TRAU option for Network Surveillance Base Software

PKV176   **Provides VoIP Protocol (SIP, MGCP, Megaco etc.) CDR option for Network Surveillance Base Software**
Requires SIP, Megaco, MGCP, H323, RTP Specific Software at Probe Level; requires PKV101 at the central site.

PKV101   **Offline / Remote PacketScan Analyzer (Optional with PKV170 NetSurveyorWeb™)**
Requires SIP, Megaco, MGCP, H323, RTP Protocol Decodes at Central Site (w/ dongle) - requires PKV170 and PKV176

MPT00   **T1 Multiport Repeater**
For 1:12 T1 Repetition
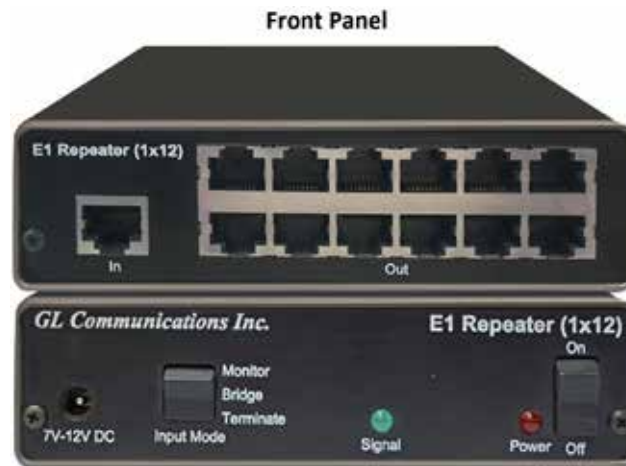
T1 Multiport Repeater RJ45

MPE00   **E1 Multiport Repeater**
For 1:12 E1 Repetition

E1 Multiport Repeater Bantom

DPT00 **Dual T1 Multiport Repeater**
For 2X 1:4 T1 Repetition
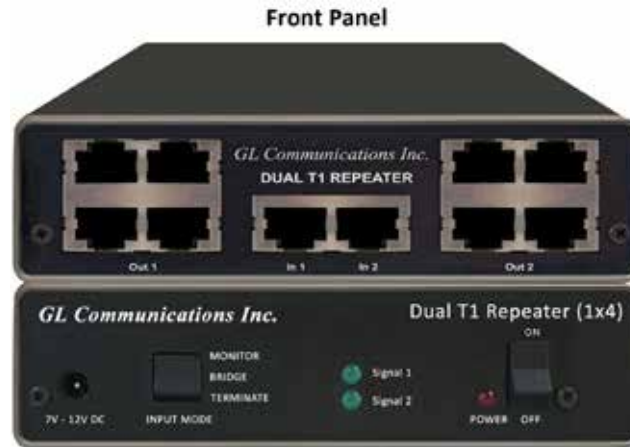
Dual T1 Multiport Repeater

DPE00 **Dual E1 Multiport Repeater**
For 2X 1:4 E1 Repetition
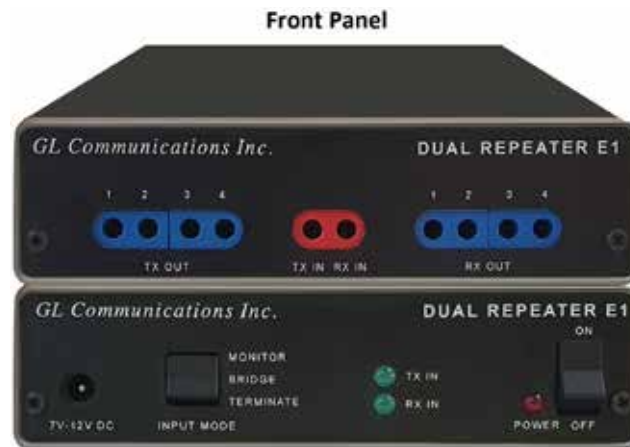
Dual E1 Multiport Repeater

For more information, please visit https://www.gl.com/t1e1-multi-port-and-optical-repeater.html

SWT001   **T1 / E1 / J1 Monitor / Intrusive Switch**
For more information, please visit https://www.gl.com/t1e1j1switch.html
For 8 Port Monitor / Intrusive Failsafe Switch

Front Panel

Back Panel
T1/E1/J1 Monitor /Intrusive Switch

SME063y   **Special Dual E1 Y Cable**
Dual E1 Y Cable; Pinout E1#1, 8-2, 7-1, 6-5, 5-4, E1#2, 4-2, 3-1, 2-5, 1-4 – At least one required, up to 36 may be required; not included with SME063 or SME063d

SME063sc   **Duplex SC to SC Single Mode 1310 nm**
Duplex SC to SC Single Mode 1310 nm – 2 meters – At least one required

BTS001   **Small BTS GSM Cell**
BTS with Abis over IP; up to 8 Tx/Rx channels
BTS010   **w/ GSM – R Option**
Optional GSM – R Features
BSC010   **BSC / MSC GSM – R Option**
Optional GSM – R Features for BSC and MS

Miscellaneous

SME063   **STM-1 Multiplexer / Demultiplexer**
SME063   **w/ 1:1 Fiber Protection**
For more information, please visit https://www.gl.com/stm-1-mux-demux.html
Multiplexes and demultiplexes 63 E1s into / from an STM 1; optional 1:1 Fiber Protection

***** End of TDM Hardware & Software Products Section *****

Fax and Modem Analysis Software

FXT001   **GLInsight™ - Single Fax Analysis - TDM**

FXT002   **GLInsight™ - Single Fax Analysis – IP**
Provides offline fax protocol and image analysis of captured PCM files w/dongle.

For more information, please visit https://www.gl.com/telecom-test-solutions/ip-tdm-pstn-modem-fax-testing-solutions.html

MDT001   **GLInsight™ - Single Modem Analysis - TDM**

MDT002   **GLInsight™ - Single Modem Analysis - IP**
Provides offline modem protocol and data analysis of captured PCM files w/dongle.

XXFT0   **Fax Emulation**
Fax Emulation for T1 E1 and Analog Interfaces (FXO and FXS), Includes xx600, requires one of the licenses as below-

XXFT2   **2 Fax port licenses**

XXFT3   **8 Fax port licenses**

XXFT4   **30 Fax port licenses**

XXFT5   **60 Fax port licenses**

XXFT6   **120 Fax port licenses**

VQT035   **Voice Recorder (FXO RJ11 Hardware Tap / 2-Wire Capture Software)**
Used for capturing Audio from RJ11 connections for GL Insight Fax / Modem Analysis, requires warranty or USB T1E1 unit; includes FXO RJ11 Hardware Tap VBA038   FaxScan™ for PCM

PKV104   **FaxScan™ for SIP and Fax over IP (T.38)**
FaxScan™ is GL's command-line Fax decoder/demodulator application used to analyze the recorded voice band traffic (PCM stream & PCAP files) for Fax traffic. It provides analysis of the T.38 packets, T.30 frames, general call-flow indicators and decoded fax image in TIFF-F format. FaxScan™ is also available as a licensed module along with GL's Voice Band Analyzer (VBA) for processing 2-Wire or 4-Wire captures.

***** End of Fax & Modem Analysis over TDM / IP Section *****

Echo Canceller Test Tools

PKB105   **G.168 Echo Canceller Test Compliance Suite**
Supports manual G.168 Echo Canceller Test Compliance Procedures and Codec Files (w/dongle to enable GLCView); includes PKB070.

PKB067   **Automated Echo Canceller Testing – All IP Version**
Provides Fully Automated EC testing per G.168 from the VoIP side includes PKB110 – call for details and limitations (w/ dongle version); includes PKB070 and AEC001

PKB080   **Automated Echo Canceller Testing TDM-VoIP**
Provides Fully Automated LEC Testing per G.168 for combined TDM-VoIP Interfaces, requires dongle; includes PKB100, PKB110, xx600, xx610, xx630 and requires additional PKV100, T1/E1 Card with xx062 and xx105); includes PKB070 and AEC001

PKB081   **Automated Acoustic Echo Canceller Compliance Testing (Partial Tests)**
Provides Fully Automated AEC Compliance Testing per G.167 and P.340 for combined TDM-TDM and TDM-VoIP Interfaces, includes xx600, xx610, xx630, xx631;may require PKB100, PKB110, and Level Adjustment Unit ; xx062 and xx020 recommended ; includes PKB070.

AEC001   **AutoEC Test Viewer**
Offline Viewing of AutoEC Test Files / Results; included with PKB067 and PKB080

PKB070   **Audio Processing Utility**
Adds noise, creates line or acoustic echo, analyzes speech level and other useful functions – requires dongle; included with EMU037

XX062   **Echo Path Delay / Loss Simulation Software**
Simulates Echo Path Delay and Loss w/GLCView ; includes PKB070

XX063   **Echo Path Delay / Loss Measurement Software**
Measures Echo Path Delay and Loss.

XX065   **G.168 Manual Test Suite for T1 & E1 Echo Cancellers**
(Manual Testing Software and Procedures) Specialized procedures, test software, and test files for manual Echo Canceller Testing per CCITT G.168; w/ GLC View; includes xx020, xx062, xx063, xx066, and PKB070.

XX066   **Digital Echo Canceller**
This application is a multi-channel digital echo canceller; Measure and displays impulse response, ERL, delay, etc.

XX067   **Automated Echo Canceller Testing without VQT**
Performs automated Echo Canceller testing in accordance with G.168 ITU test requirements; optional Voice Quality Testing Software; includes xx019 Tx/Rx Utility software or xx600, xx610, and xx630; w/dongle.

XX068   **Semi-Automated and Scripted Echo Canceller Testing Suite w/ C++ Client**
Uses Windows Client Server Software (includes xx600, xx610, xx630) with customizable scripts for EC G.168 Testing; w/ dongle - available with C++ Client.

PKB080   **Automated Echo Canceller Testing for TDM-VoIP**
For more information, please visit Voice Quality Testing Products.

Echo Canceller Test Tools

Echo, noise, and delay Possibilities
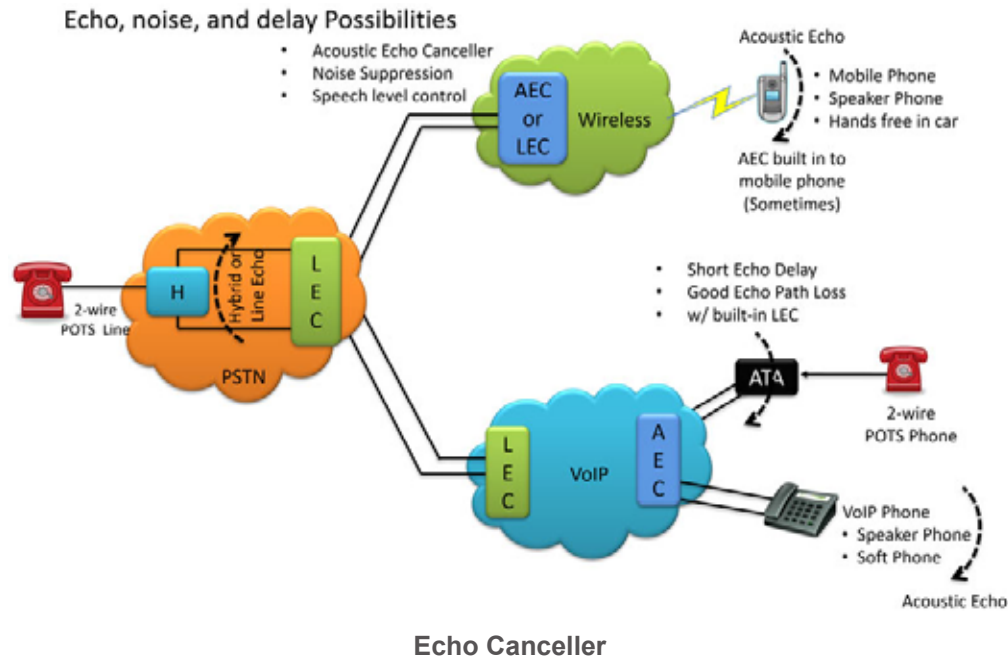
Echo Canceller

PKB081   **Automated Acoustic Echo Canceller Compliance Testing (Partial Tests)**
For more information, please visit Voice Quality Testing Products.

EMU037   **Echo Measurement Utility**
Analyzes echo return loss (ERL) and echo path delay (EPD) for 2Wire Analog, VoIP, T1 E1, and Mobile networks;PKB070 is included

For more information, please visit Voice Quality Testing Products.
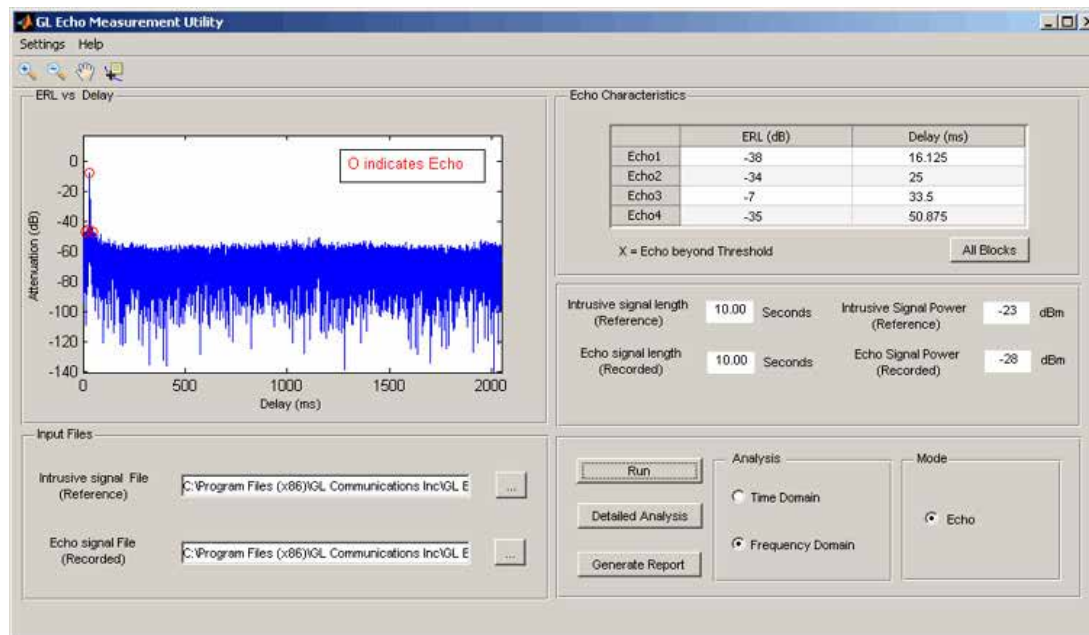
2-Wire Echo Measurement (EMU)

***** End of ECHO Canceller Test Tools *****

GL Communications Inc.

T3E3 Hardware & Software Products
T3 E3 Portable Unit

TE3001   **Dual T3 E3 / T1 E1 Hardware USB Base Unit**
Portable USB Unit – Requires TT3001 or EE3001. If supplied with Notebook PC, requires medical power supplies, 9v, 18 watts, 2A, to pass on ground to USB T3 E3.

Dual T3 E3 / T1 E1 USB unit

TE3005   **RACK ENCLOSURE FOR T3/E3 SYSTEM – UP TO 6 T3/E3S**
2U - 19" Rack Enclosure, Power Supply, Fans, 4 Port USB Hub, Cables and Accessories, Accommodates three (3) Dual T3/E3 USB Units, Requires TT3001 or EE3001.

2U– RACK Encclousre for T3/E3 System

TT3001   **T3 / T1 / E1 Analyzer Basic Software**
Basic Software for Windows® 7/10

EE3001   **E3 / E1 Analyzer Basic Software**
Basic Software for Windows® 7/10
- Portable T3 E3 / T1/E1 High Performance USB Base Unit
- w/ Basic Software for T3 / T1 Analyzer Basic Software
- w/ Basic Software for E3 / E1 Analyzer Basic Software
- Optional applications listed below

For more information, please visit https://www.gl.com/test-high-speed-wan-services-t3-e3-ds3-line.html

mTOP™ Integrated Test Platforms
Refer to mTOP™ Platforms page for more details

For more information, please visit https://www.gl.com/test-tools-in-rack-based-platforms.html#mtop-t1e1t3e3

T3 E3 Analysis Emulation

Basic Applications

Monitor T3 or E3 Status
Monitors the T3 (DS3) /E3 line conditions for available T3/E3 ports

Alarm Generation and Error Injection
Internally generates various types of errors and / or alarms and transmits them on the outgoing T3 (DS3)/E3 stream

Tx Rx Memory Loopback
Loops all the received data from the memory back to the transmitting port

Monitor Received Data
Monitors raw bit values on the selected ports

Transmit and Receive Configurations
Various options (errors insertion, error counting, FEAC messaging, frequency offset) can be configured in the Tx/Rx parameters for the T3 (DS3)/E3 signal

Multiplex and De-multiplex T1/E1 signals
Processing Software for T3/E3 Tx / Rx Files

Bit Error Rate Test - BERT (Full Frame and Unframed)
Measures the correctness of data received on T3 (DS3) /E3 channels for a repetitive fixed or pseudorandom pattern for the given transmission

Special Applications

(Note: XX below denotes TT3 or EE3 depending on the T3 or E3 Basic Software Purchased)

TT3020	**T3 Record Playback Software (GUI)**	
EE3020	**E3 Record Playback Software (GUI)**	
	File Capture & Transmit over T3 E3 – framed & unframed	
TT3021	**T3 FEAC Messaging**	
	Decode and Simulate Far End Alarm Channel (FEAC) messages	
TT3190	**T3 HDLC Tx/Rx Test + Analyzer (GUI)**	
EE3190	**E3 HDLC Tx/Rx Test + Analyzer (GUI)**	
	Send, Receive, and Analyze HDLC over T3 or E3	
TT3135	**T3 PPP Analyzer (GUI)**	
EE3135	**E3 PPP Analyzer (GUI)**	
	Analysis and Decode ML-PPP and PPP protocols and other higher layer IP protocols over T3 or E3	
TT3130	**T3 Frame Relay Analyzer (GUI)**	
EE3130	**E3 Frame Relay Analyzer (GUI)**	
	Analysis and Decode Frame Relay protocol over T3 or E3	
TT3160	**T3 ATM Analyzer**	
	Analysis and decode of ATM cells over T3	
TT3200	**Channelized T3 License for T1**	
	Direct T1 Analysis / Emulation for up to 28 T1s from T3	

GL Communications Inc.

TTT001 **Soft T1 Analyzer Application-Required and Included**
TTTxxx **Channelized Options for T1**
Direct T1 Analysis for up to 28 T1s from T3 Channelized Options for T1

TT3210 **Channelized T3 License for E1**
Direct E1 Analysis/Emulation for up to 21 E1s from T3

EEE001 **Soft E1 Analyzer Application-Required and Included**
EEExxx **Channelized Options for E1**
Direct E1 Analysis for up to 21 E1s from T3
Channelized Options for E1

EEE001 **Soft E1 Analyzer Application-Required and Included**
EEExxx **Channelized Options for E1**
Direct E1 Analysis for up to 21 E1s from T3
Channelized Options for E1

EE3200 **Channelized E3 License for E1**
Direct E1 Analysis / Emulation for up 16 E1s from an E3

EEE001 **Soft E1 Analyzer Application-Required and Included**

EEExxx **Channelized Options for E1**
Direct E1 Analysis for up 16 E1s from an E3
Channelized Options for E1

TT3600 **T3 Basic Client Server Scripted Control Software**

EE3600 **E3 Basic Client Server Scripted Control Software**
Precise & Sequential control of T3 or E3 Analyzer via Client Server - Uses TCP/IP

TT3610 **T3 Client Server Tx/Rx File**
EE3610 **E3 Client Server Tx/Rx File**
Tx / Rx Files on Unframed or Unchannelized T3 or E3; requires xx600

TT3634 **T3 Client Server High Throughput HDLC Tx/Rx Test**
EE3634 **E3 Client Server High Throughput HDLC Tx/Rx Test**
HDLC Simulation over T3 or E3 with Impairments ; requires xx600

TT3635 **T3 Client Server High Throughput PPP Tx/Rx Test**
EE3635 **E3 Client Server High Throughput PPP Tx/Rx Test**
PPP Emulation over T3 or E3, requires xx634 and xx600

TE3002 **USB T3 E3 Hardware Warranty**
T3 E3 USB Extended 1 yr. Hardware Warranty

TE3003 **USB T3 E3 Software Support**
T3 E3 USB Extended 1 yr. Software Upgrades and Support

For complete list of accessories including special hardware options, visit https://www.gl.com/accessor.html

***** End of T3E3 Analysis Emulation Section *****

OC-3, STM-1 and OC-12, STM-4 Hardware - LightSpeed™

LTS100   **Lightspeed1000TM - Dual OC3/12 STM1/4 PCIe Card**
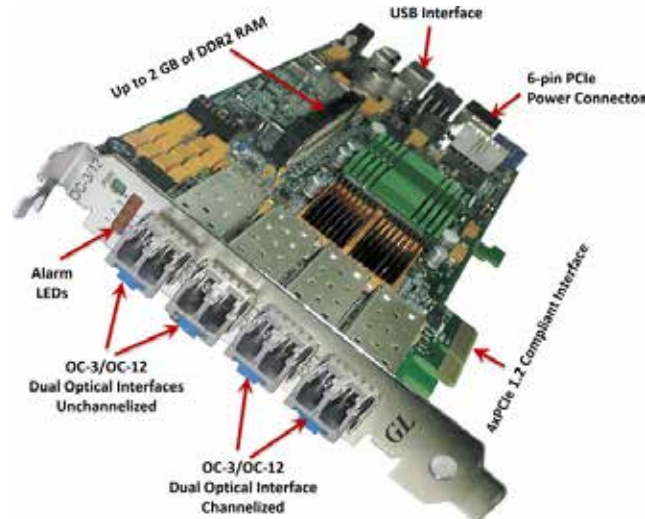
Dual OC-3/12 & STM-1/4 PCI Express Card

LTS105   **Lightspeed1000^{TM} - Portable Dual OC3/12 STM1/4 USB Unit**

PCIe Card or Portable USB Unit with Quad Interfaces: 2 - OC3 / OC12 / STM1 / STM4, 2 - GigE, and a single USB 2.0; requires LTS200 or LTS201, or LTS300 or LTS301, LTS501 or LTS502; includes 2 SM SFPs
For more information, please visit https://www.gl.com/OC3-OC12-analysis-emulation-card.html

Portable Dual OC-3/12 & STM-1/4 USB unit

mTOP™ with USB T3E3, PacketExpert™ 1G and LightSpeed 1000™

LTS102   **Hardware Warranty**
LTS103   **Software Support**

For more information, please visit https://www.gl.com/OC3-OC12-analysis-emulation-card.html

UnChannelized Analysis and Emulation Software Applications - LightSpeed™

LTS200 **OC3/STM1 ATM Monitor, BERT, Tx/Rx Test**
Basic ATM Monitoring, Test, and BERT

LTS201 **OC3/STM1 PoS Monitor, BERT, Tx/Rx Test**
Basic PoS Monitoring, Test, and BERT

LTS202 **Record Playback for OC3/STM1 ATM**

LTS203 **Record Playback for OC3/STM1 PoS**
Wirespeed capture and playback to / from hard disk w/ time-stamping; STS-3C/VC-4

LTS204 **Protocol Analysis for OC3/STM1 ATM**
AAL2, AAL5 Protocol Analysis

LTS205 **Protocol Analysis for OC3/STM1 PoS**
PoS Protocol Analysis

LTS215 **Packet Data Analysis (PDA) for PoS**
Packet Data Analysis (PDA) for PoS

LTS206 **Protocol Analysis for OC3/STM1 UMTS**
UMTS Protocol Analysis; requires LTS200

LTS216 **Packet Data Analysis (PDA) for UMTS**
IuCs Call Analysis for UMTS, also called PDA

LTS214 **OC3/STM1 SSCOP Server**
SSCOP Server Emulates ATM Layer 2 and Adaptation Layer (AAL2/5) Services – used with MAPS -IuCs

LTS217 **OC3/STM1 AAL2 Traffic Core**
Traffic Simulation over AAL2 using various codecs, ability to Tx Rx voice files, tones, digits, etc, can be used with LTS220, requires additional codec licenses

LTS220 **OC3/STM1 MAPS UMTS IuCS over ATM**
IuCS Interface Emulation over ATM, simulates RNC and MSC, requires LTS214

LTS207 **Delay Emulaton for OC3/STM1 PoS payloads**
Delay Emulation for PoS from 1 ms to 500 ms

LTS208 **Delay Emulation for OC3/STM1 ATM payloads**
Delay Emulation for ATM from 1 ms to 500 ms

LTS209 **SONET / Ethernet Converter**
Converts ATM within SONET to ATM within Ethernet and vice versa; includes LTS115, LTS200, LTS202, SA005lts 1 RU mTOP Enclosure for LightSpeed1000s with Windows 10/64 & TPM 2.0 chip, Intel NUC, 8GB RAM, USB 3.0 Hub, 240 GB SSD

LTS300 **OC3/STM1/OC12/STM4 ATM Monitor, BERT, Tx/Rx Test**
Basic ATM Monitoring, Test, and BERT, includes OC3/STM1

LTS301 **OC3/STM1/OC12/STM4 PoS Monitor, BERT, Tx/Rx Test**
Basic PoS Monitoring, Test, and BERT, includes OC3/STM1

LTS302   **Record Playback for OC3/STM1/OC12/STM4 ATM**
Wirespeed capture and playback to / from hard disk w/ time-stamping; STS-12C/VC-4-4C and STS-3C/VC-4

LTS303   **Record Playback for OC3/STM1/OC12/STM4 PoS**
Wirespeed capture and playback to / from hard disk w/ time-stamping; STS-12C/VC-4-4C and STS-3C/VC-4

LTS305   **Protocol Analysis for OC3/STM1/OC12/STM4 PoS**
PoS Protocol Analysis

LTS304   **Protocol Analysis for OC3/STM1/OC12/STM4 ATM**
AAL2, AAL5 Protocol Analysis

LTS315   **Packet Data Analysis (PDA) for PoS**
Packet Data Analysis (PDA) for PoS

LTS306   **Protocol Analysis for OC3/STM1/OC12/STM4 UMTS**
UMTS Protocol Analysis; requires LTS300

LTS316   **Packet Data Analysis (PDA) for UMTS**
IuCs Call Analysis for UMTS, also called PDA

LTS314   **OC12/STM4 SSCOP Server**
SSCOP Server Emulates ATM Layer 2 and Adaptation Layer (AAL2/5) Services – used with MAPS -IuCs

LTS317   **OC12/STM4 AAL2 Traffic Core**
Traffic Simulation over AAL2 using various codecs, ability to Tx Rx voice files, tones, digits, etc, can be used with LTS220, requires additional codec licenses

LTS320   **OC12/STM4 MAPS UMTS IuCS over ATM**
IuCS Interface Emulation over ATM, simulates RNC and MSC, requires LTS214

LTS307   **Delay Emulaton for OC12/STM4 PoS payloads**
Delay Emulation for PoS from 1 ms to 500 ms

LTS308   **Delay Emulation for OC12/STM4 ATM payloads**
Delay Emulation for ATM from 1 ms to 500 ms

Channelized Analysis and Emulation Software Applications - LightSpeed™

The following are only available for PCIe version of Lightspeed 1000

LTE001   **E1 Personality for Channelized**
E1 Personality for n x 16 E1 Channels

LTT001   **T1 Personality for Channelized**
T1 Personality for n x 16 T1 Channels

LTS501   **OC3/STM1 RAW**

LTS502   **OC12/STM4 RAW**
Rx/Tx RAW – Channelized / Unchannelized

LTS503   **Record Playback for OC3/STM1 RAW**

LTS504   **Record Playback for OC12/STM4 RAW**
Wirespeed capture and playback to / from hard disk w/ time-stamping

LTS108   **Any 16 Ports Channelized License for OC3/12, STM1/4**
Any 16 Ports Channelized License for OC3/12, STM1/4, n=1

LTS116   **Any 32 Ports Channelized License for OC3 /12, STM1/4**
Any 32 Ports Channelized License for OC3/12,STM1/4, n=2

LTS124   **Any 48 Ports Channelized License for OC3/12, STM1/4**
Any 48 Ports Channelized License for OC3/12,STM1/4, n=3

LTS164   **All Ports Channelized Licenses for OC3/STM1**
All Ports Channelized Licenses (84x2 for T1, 63x2 for E1), n=5

LTS464   **All Ports Channelized Licenses OC12, STM4**
All Ports Chan Lic (84x4 for T1, 63x4 for E1) (n = 6)

LTEXXX   **Channelized Options for E1**
Channelized Options for E1 (ISDN, SS7, HDLC)

LTTXXX   **Channelized Options for T1**
Channelized Options for T1 (ISDN, SS7, HDLC)

LTS111   **API Software Toolkit for Custom Development (Linux)**
Develop Custom Applications for OC-3/STM-1 OC-12/STM-4 Cards for Linux; Requires C++ dev skills

OC3/12 STM1/4 Related Accessories and Cables - LightSpeed™ & SonetExpert™

IPN1310   **SFP Transceiver for 1 Gbps Optical, Duplex LC, Single-Mode, 1310nm**
Generic SFP for 1 Gbps Optical, Duplex LC Connector, Single-Mode,1310nm, 15km typical maximum range

IPN850   **SFP Transceiver for 1 Gbps Optical, Duplex LC, Multi-Mode, 850nm**
Generic SFP for 1 Gbps Optical, Duplex LC Connector, Multi-Mode, 850nm, 550m typical maximum range

PN1310p   **SFP+ Transceiver for 10 Gbps Optical, Duplex LC, Single-Mode, 1310nm**
Generic SFP+ for 10 Gbps Optical, Duplex LC Connector, Single-Mode, 1310nm, 10km typical maximum range

IPN850p   **SFP+ Transceiver for 10 Gbps Optical, Duplex LC, Multi-Mode, 850nm**
Generic SFP+ for 10 Gbps Optical, Duplex LC Connector, Multi-Mode, 850nm, 300m typical maximum range

IPN100m   **QSFP28 Transceiver Multi-Mode 100G**
QSFP28 Transceiver, Multi-Mode, 850nm, 100m, for 100 G, FTLC RDPL or equivalent

IPN100s   **QSFP28 Transceiver Single-Mode 100G**
QSFP28 Transceiver, Single-Mode, for 100G , FTL4C2QE1C or equivalent

IPN040m   **QSFP+ Transceiver Multi-Mode 40G**
QSFP+ Transceiver for 40G, Multi-Mode, 850nm, 100m, FTL4C2QE1C or equivalent

IPN040s   **QSFP+ Transceiver Single-Mode**
QSFP+ Transceiver for 40G, Single-Mode , FTL4C1M1C or equivalent

IPN801   **SFP Transceiver for 1 Gbps, Electrical, RJ45**
Generic SFP for 1 Gbps, Electrical w/ RJ45 Connector

IPN803   **SFP Transceiver for 100 Base FX**
Generic SFP for 100 Mbps Optical, Duplex LC Connector, only available for PXN100 for Ports 1 and 2

IPN804   **SFP Transceiver for 2.5 Gbps, Electrical, RJ45**
SFP for 2.5 Gbps, Electrical w/ RJ45 Connector

SA019a   **1 Gbps / 10 Gbps Fiber Optic Cable, Single-Mode,**
Duplex LC to Duplex LC 2m FO Jumper for 1 Gbps or 10 Gbps, 9/125 Single-Mode, Ø2mm

SA019b   **1 Gbps / 10 Gbps Fiber Optic Cable, Single-Mode,**
Duplex LC to Duplex SC 2m FO Jumper for 1 Gbps or 10 Gbps, 9/125 Single-Mode, Ø2mm

SA019c   **1 Gbps / 10 Gbps Fiber Optic Cable, Multi-Mode,**
Duplex LC to Duplex LC 2m FO Jumper for 1 Gbps or 10 Gbps, 50/125 Multi-Mode, OM3, Ø2mm

SA019d   **1 Gbps / 10 Gbps Fiber Optic Cable, Multi-Mode,**
Duplex LC to Duplex SC 2m FO Jumper for 1 Gbps or 10 Gbps, 50/125 Multi-Mode, OM3, Ø2mm

SA019e   **4G / 100G Fiber Optic Cable, Multi-Mode**
20 feet MPO (Female) Fiber Cable, 12 Fibers, QSFP, Multimode, for connection between 2 QSFP+ or 2 QSFP28 transceivers

SA019f   **4G / 100G Fiber Optic Cable, Single-Mode**
20 feet MPO (Female) Fiber Cable, 12 Fibers, QSFP, Single mode, for connection between 2 QSFP+ or 2 QSFP28 transceivers

SA019st   **1 Gbps / 10 Gbps Fiber Optic Non-Intrusive T-tap, Duplex LC, Single-Mode**
1 Gbps / 10 Gbps Fiber Optic T-tap for Non-Intrusive Monitoring, Duplex LC Connectors, 9/125 Single-Mode, 70/30 split –
Should also order SA019sc or SA019sk2

SA019sc   **Fiber Optic Analyzer Cable, (Special 'Y' Cable), Single-Mode, Duplex LC to Dual Duplex LC, 3m**
3m FO Jumper, 9/125 SM, Duplex LC-Dual Duplex LC, Ø3mm, Special Analyzer Cable for use with SA019st

SA019mt   **1 Gbps / 10 Gbps Fiber Optic Non-Intrusive T-tap, Duplex LC, Multi-Mode**
1 Gbps / 10 Gbps Fiber Optic T-tap for Non-Intrusive Monitoring, Duplex LC Connectors, 50/125 Multi-Mode, 70/30 split –
Should also order SA019mc or SA019mk2

SA019mc   **Fiber Optic Analyzer Cable (Special 'Y' Cable), Multi-Mode, Duplex LC to Dual Duplex LC, 3m**
3m FO Jumper, 50/125 MM, Duplex LC-Dual Duplex LC, Ø3mm, Special Analyzer Cable for use with SA019mt

SA019rt   **Electrical Regeneration Tap for 10/100/1000Base-T (non-aggregation)**
Wirespeed Non-aggregation replication and monitoring, passive access without packet tampering, traffic from all OSI
layers available for analysis, no IP address, fail-safe bypass, redundant power option extra

SA019rta   **Electrical Regeneration Tap for 10/100/1000Base-T (aggregation)**
Wirespeed aggregation replication and monitoring, passive access without packet tampering, traffic from all OSI layers
available for analysis, no IP address, fail-safe bypass, redundant power option extra

SA019ska   **OC3/12, STM1/4 Fiber Optic Single-Mode T-tap Kit with Required   Cables and SFP Transceivers**
Kit Includes: (1) SA019st, (1) SA019sc, (2) IPN1310a, (2) SA019a, (2) SA019b

SA019sk2   **1 Gbps Fiber Optic Single-Mode T-tap Kit with Required Cables and SFP Transceivers**
Kit Includes: (1) SA019st, (1) SA019sc, (2) IPN1310, (2) SA019a, (2) SA019b

SA019mka   **OC3/12, STM1/4 Fiber Optic Multi-Mode T-tap Kit with Required Cables and SFP Transceivers**
Kit Includes: (1) SA019mt, (1) SA019mc, (2) IPN850a, (2) SA019c, (2) SA019d

SA019mk2   **1 Gbps Fiber Optic Multi-Mode T-tap Kit with Required Cables and SFP Transceivers**
Kit Includes: (1) SA019mt, (1) SA019mc, (2) IPN850, (2) SA019c, (2) SA019d

SA019skp2   **10 Gbps Fiber Optic Single-Mode T-tap Kit with Required Cables and SFP+ Transceivers**
Kit Includes: (1) SA019st, (1) SA019sc, (2) IPN1310p, (2) SA019a, (2) SA019b

SA019mkp2   **10 Gbps Fiber Optic Multi-Mode T-tap Kit with Required Cables and SFP+ Transceivers**
Kit Includes: (1) SA019mt, (1) SA019mc, (2) IPN850p, (2) SA019c, (2) SA019d

SonetExpert™(OC-3/STM-1 OC-12/STM-4) Hardware & Software

SEU100 **SonetExpert™ - Dual OC3/12 STM1/4 USB Unit**
Includes OC3/OC12/STM1/STM4 SFPs (customer preference of MM or SM)
Portable USB Unit with 2 Optical Interfaces for Channelized OC3 / OC12 / STM1 / STM4 applications;
- single USB 3.0;
- includes OC3/OC12/STM1/STM4 SFPs (customer preference of MM or SM);
- includes MC-BERT option;
- requires additional software for RAW (SEUE02/SEUT02) and T1 E1 personality (SEE001/SET001);
- same platform as PXN100 / PXN101 and upgradeable to PacketExpert 10GX for Ethernet functionality

SEU110 **SonetExpert™ Upgrade to PXN100**
Upgrades the SonetExpert™ hardware platform to perform PXN100 functions

SEU120 **SonetExpert™ Upgrade to PXN101**
Upgrades the SonetExpert™ hardware platform to perform PXN101 functions, requires SEU110

PXN00 **Optical Multiport Tap/Repeater**
1x5 or 2x3 Optical Signal Tap/Repeater; repeats 10/100/1000, 2.5 GigE, OC3/STM1, OC12/STM4, OC48/STM16 optical signals; multi-rate SFPs and FO cables extra/optional for multimode and/or single mode; multiple units into MT002 rack enclosure optional

PXN01 **Multirate multimode SFPs and FO Cables**
Six (6) - 10/100/1000 and 2.5 GigE multimode SFPs and multimode FO cables

PXN02 **Multirate single mode SFPs and FO Cables**
Six (6) - 10/100/1000 and 2.5 GigE single-mode SFPs and multimode FO cables

SonetExpert™ UnChannelized Analysis and Emulation Software Applications

SEU901 **UnChannelized BERT for OC3 / STM1 and OC12 / STM4 Rates**
UnChannelized BERT on OC3 / STM1 and OC12 / STM4 Rates for SEU100

SEU902 **UnChannelized BERT for OC3 / STM1, OC12 / STM4, OC48 / STM16, OC192 / STM64 Rates**
UnChannelized BERT on OC3 / STM1, OC12 / STM4, OC48 / STM16, and OC192 / STM64 Rates for SEU100; includes SEU901

SEU300 **OC3/STM1/OC12/STM4 ATM Monitor, BERT, Tx/Rx Test**
Basic ATM Monitoring, Test, and BERT

SEU301 **OC3/STM1/OC12/STM4 PoS Monitor, BERT, Tx/Rx Test**
Basic PoS Monitoring, Test, and BERT

SEU302 **Record Playback for OC3/STM1/OC12/STM4 ATM**
Wirespeed capture and playback to / from hard disk w/ time-stamping; STS-12C/VC-4-4C and STS-3C/VC-4

SEU303 **Record Playback for OC3/STM1/OC12/STM4 PoS**
Wirespeed capture and playback to / from hard disk w/ time-stamping; STS-12C/VC-4-4C and STS-3C/VC-4

SEU304   **Protocol Analysis for OC3/STM1/OC12/STM4 ATM**
AAL2, AAL5 Protocol Analysis

SEU305   **Protocol Analysis for OC3/STM1/OC12/STM4 PoS**
PoS Protocol Analysis

SEU503   **Record Playback for OC3/STM1 RAW**
Wirespeed capture and playback to/from hard disk w/ time-stamping

SEU504   **Record Playback for OC3/STM1/OC12/STM4 RAW**
Wirespeed capture and playback to/from hard disk w/ time-stamping

SEU315   **Packet Data Analysis (PDA) for PoS**
Packet Data Analysis (PDA) for PoS

SonetExpert™ Channelized Analysis and Emulation Software Applications

The following are only available for PCIe version of Lightspeed 1000

SEUE02   **UnChannelized BERT for OC3 / STM1 and OC12 / STM4 Rates**
OC3/STM1 Basic License; permits visibility into all channels

SEUT02   **OC3/OC12 and STM1/STM4 RAW**
OC3/STM1 and OC12/STM4 Basic Licenses; permits visibility into all channels

Basic Applications
SEE001   **SonetExpert™ Basic E1 Software**
E1 Personality for Channelized; view / test all E1s, DS0s

SET001   **SonetExpert™ Basic T1 Software**
T1 Personality for Channelized; view / test all T1s, DS0s

Optional Application Licenses
SEU116   **16 Channels for OC3/STM1**
Any 16 T1 E1 Chan Lic for OC3/STM1

SEU132   **32 Channels for OC3/STM1**
Any 32 T1 E1 Chan Lic for OC3/STM1

SEU164   **64 Channels for OC3/STM1**
Any 64 T1 E1 Chan Lic for OC3/STM1

SEU128   **128 Channels for OC3/STM1**
Any 128 T1 E1 Chan Lic for OC3/STM1 (note, max for E1 is 126)

SEU196   **All Channels (168 for T1, 126 for E1) for OC3/STM1**
All (84x2 T1s, 63x2 E1s) Chan Lic for OC3/STM1

SEU416   **16x4 Channels for OC3/STM1 and OC12/STM4, includes SEU116**
Any 64 T1 E1 Chan Lic for OC3/OC12/STM1/STM4

SEU432   **32x4 Channels for OC3/STM1 and OC12/STM4, includes SEU132**
Any 128 T1 E1 Chan Lic for OC3/OC12/STM1/STM4

SEU464   **64x4 Channels for OC3/STM1 and OC12/STM4, includes SEU164**
Any 256 T1 E1 Chan Lic for OC3/OC12/STM1/STM4

SEU428   **128x4 Channels for OC3/STM1 and OC12/STM4, includes SEU128**
Any 512 T1 E1 Chan Lic for OC3/OC12/STM1/STM4

SEU464   **All Channels (672 for T1, 504 for E1) for OC3/STM1 and OC12/STM4, includes SEU196**
All (84x8 T1s, 63x8 E1s) Chan Lic for OC3/OC12/STM1/STM4

SEEXXX   **Channelized Options for E1 in 16 Ch increments**
Channelized Options for E1 (16, 32, ..)

SETXXX   **Channelized Options for T1 In 16 Ch increments**
Channelized Options for T1 (16, 32, ..)

***** End of OC-3/STM-1 OC-12/STM-4 Analysis & Emulation Section *****

Handheld Testers

LTS010   **LinkTest™ Dual E1 - E1, Datacom, Jitter, Wander Testing**
GL's LinkTest™ Dual E1 is a handheld dual-port tester for E1 and data communications (V.11 / X.24, V.24/RS232, V.35, V.36/RS449, EIA-530, EIA-530A) interfaces.

LinkTest™ Dual E1

LTS011   **Data Communication Option**
Data (V.24, V.28, RS-232, X.21, V.11, V.35, V.36, RS-449, EIA-530, EIA-130A)

LTS012   **Data, Jitter, and Pulse Mask Option**
Data, Jitter, and Pulse Mask Option

LTS015   **Remote Option**
Remote Option

LTS010S   **Extended 1 Yr. Hardware and Software Support**
Extended 1 Yr. Hardware and Software Upgrades and Comprehensive Support

LTS016a   **DTE/DCE Cables V.24 / V.28 / RS-232**
LTS016b   **DTE/DCE Cables X.21 / V.11**
LTS016c   **DTE/DCE Cables V.35**

LTS016d   **DTE/DCE Cables V.36 / RS-449**

LTS016e   **DTE/DCE Cables EIA-530A**
Includes both DTE and DCE Cables

LTS017   **SNMP Option for LTS010**
SNMP Remote Control and Automation, based on SNMP protocol, allows user to control remotely using SNMP queries

DX005   **Second-Year Extended Hardware Warranty**
Please review Hardware Warranty Guidelines as outlined in the User Manual

For more information, please visit https://www.gl.com/linktest-dual-e1-datacom-tester.html

***** End of Handheld Testers Section *****

Voice Quality Testing Products
Voice Quality Testing Options

VQT002   **Voice Quality Testing (PESQ only)**
GL's VQT (Voice Quality Testing) using ITU algorithms PESQ.

VQT004   **Voice Quality Testing (PESQ, PAMS, PSQM)**
For more information, please visit https://www.gl.com/voice-video-data-quality-test-solutions.html
- PESQ - Perceptual Evaluation of Speech Quality
- PAMS - Perceptual Analysis Meas. System
- PSQM - Perceptual Speech Quality Measure

VQT006   **VQT w/ POLQA Server license (no limitations)**
POLQA - Server license - Next Generation Voice Quality Testing for Fixed, Mobile, and IP based Networks – Dongle license required.

VQT006a   **VQT w/ POLQA only, small license for one / two nodes**
POLQA Next Generation Voice Quality Testing for Fixed, Mobile, and IP based Networks; Dongle license required
VQT006b   **VQT w/ POLQA only, medium license for up to 5 nodes**
POLQA Next Generation Voice Quality Testing for Fixed, Mobile, and IP based Networks; Dongle license required
VQT006c   **VQT w/ POLQA only, large license for up to 10 nodes**
POLQA Next Generation Voice Quality Testing for Fixed, Mobile, and IP based Networks; Dongle license required

VQT007a   **VQT POLQA v3, small license for one/two nodes**
POLQA v3 Voice Quality Testing for Fixed, Mobile, and IP based Networks – both Software license key and Dongle license required.

VQT009   **Conversion VQT POLQA v3, small license for on/two nodes**
Transcribe short speech files into text. Easy to access transcribed text via file, API or database. Includes 100,000 transcriptions, more at additional cost; requires internet connectivity for cloud based processing

VQT007b   **VQT POLQA v3, medium license for up to 5 nodes**
POLQA v3 Voice Quality Testing for Fixed, Mobile, and IP based Networks – both Software license key and Dongle license required.

VQT007c   **VQT POLQA v3, large license for up to 10 nodes**
POLQA v3 Voice Quality Testing for Fixed, Mobile, and IP based Networks – both Software license key and Dongle license required.

VQT007   **VQT POLQA v3, server license for 20 nodes**
POLQA v3 Voice Quality Testing for Fixed, Mobile, and IP based Networks – both Software license key and Dongle license required.

VQT014   **VQT POLQA Auto**
A stand-alone application that can run on Windows or Linux and supports automated multi-threaded VQT operation (analyzing hundreds of files using POLQA v2.4 algorithm under very fast conditions). Both VQuad and vMobile audio files are supported with all results sent to the GL DataImport (MYSQL database) and accessed using the GL WebViewer (web browser).

VQT008   **Voice Analysis Tool (VAT)**
Stand-alone application to analyze any voice file; provides metrics such as Speech Level, Noise Level, RMS Power, DC Offset, Frequency Analysis, Speech Activity, Audio Dropout, Path Confirmation, and One Way and Round Trip Delay measurements.

VQT009S **Speech-to-Text Conversion (Extended Annual)**
Extended (Annual) VQT009 Speech-to-Text Conversion Software Upgrades & Comprehensive Support. Software enhancements and support for subsequent one year increments

VQT Network Management Options

VQT208 **Indoor (Underground) Tracking System**
Provides location and timing information with voice quality for underground (non-GPS) areas.

VQT040 **VQT WebViewerTM**
For accessing the VQT results using a Web portal; Includes MySQL database.

VQT041 **VQT Web Viewer w/ Oracle Database (Perpetual License, Unlimited Users/Nodes)**
For accessing VQT results using a Web portal. Includes Oracle 19c Standard Edition One (Perpetual License for Unlimited Users/Nodes) User/Node is defined as any end-node that receives data from or creates data for the Oracle DB, including human users)

VQuad™ Software, Dual UTA HD, and Accessories

VQT010 **VQuad™ Basic Software**
The software allows automatic sending and recording of voice files for Wireless, Analog, VoIP, and TDM interfaces. Includes CLI for remote operations.

For more information, please visit https://www.gl.com/vquad.html

VQT251 **Dual UTA HD**
Next generation Dual UTA with FXO Wideband support

VQT245 **Dual UTA - 4-Port TTL Option**
TTL Triggers – 4 Ports, for PTT Key/UnKey, Audio Send/Detected

VQT252 **Dual UTA HD – Bluetooth Option**
Dual wideband Bluetooth interfaces, antennas

VQT252x **Dual UTA HD – Bluetooth Option Upgrade**
Dual wideband Bluetooth interfaces to existing Dual UTA HD (unit must be shipped back to GL for upgrade)

VQT011 **Dual UTA - Software Development ToolKit (SDK)**
Includes Dual UTA – Software Development ToolKit (SDK) with documentation for custom software development applications.

VQT204 **Real-time GPS location and timing option for Dual UTA**
Provides Garmin GPS receiver and custom cable for interfacing to Dual UTA. Location and one pulse-per-second timing are both available.

VQT209 **Dual UTA Audio / PTT 600ohm to 50ohm Adapter**
Includes RJ45 to RJ45 for connecting to Dual UTA and Dual UTA HD

VQT442 **Dual UTA Mobile Audio Cable for Smartphones**
Connects Dual UTA Tx / Rx audio to 3.5mm jack - enabled Smartphones. Includes optional polarity adapter.

VQT461 **Dual UTA HD Smartphone ACC Cable**
Connects Dual UTA HD PTT (RJ45) to 3.5mm jack-enabled Smartphones. The Smartphone ACC (Automated Call Control) cable provides voice path along with automated call control using the VQuad PTT functionality. Automated Place Call can be supported using the Android Google Voice and IOS Siri applications

VQT443 **Cell phone Adapter Cable**
Custom, adapts VQT442 to 2.5mm 3-wire plug.

VQT446 **Dual UTA HD Custom PPT Audio Cable**
For Dual UTA HD (VQT251 and VQT241), custom RJ45 PTT Cable.

VQT449 **Dual UTA Audio /PTT Interface Cable (RJ-45 to W425)**
Custom RJ-45 to W425 (Dual WECO 310). Connects Dual UTA to FAA Voice Switch / Plug Termination

VQT448 **Dual UTA Audio/PTT Interface Cable (RJ45 to LEMO), includes both Left and Right cables**
Custom RJ45 to LEMO LEFT and RJ45 to LEMO RIGHT (includes both cables). Connects Dual UTA to FAA Voice Switch / Plug Termination

VQT451 **Dual UTA HD Mini XLR PTT Adapter Cable**
Adaptor for converting Dual UTA (VQT241) RJ45 cable to Dual UTA HD (VQT251) Mini XLR cable

VQuad™ Probe

VQT273 **VQuad Probe Watchdog Service**
Background service for VQuad Probe, auto reboot Probe if Windows becomes inactive or VQuad software is non-responsive. Normal shutdown of VQuad will not cause reboot (i.e. VQuad Probe maintenance or software upgrade)

VQT280 **VQuad™ Probe HD with Dual UTA HD**
Self-contained unit for unattended testing includes VQuad, Dual UTA HD, and PC with failsafe operation. PC portion includes two GBit Ethernet and four external USB interfaces

Self Contained VQuad™ Probe™ HD

VQT281 **VQuad™ Probe HD without Dual UTA HD**
Self-contained unit for unattended testing includes VQuad and PC with failsafe operation. PC portion includes two GBit Ethernet and four external USB interfaces

VQT285 **VQuad™ Probe HD Upgrade**
Upgrade existing VQuad and Dual UTA HD into a single self-   contained unit for unattended testing. Includes PC with fail-safe operation and support for adding customer Dual UTA HD. PC portion includes two GBit Ethernet and four external USB interfaces

VQT291   **vMobile – Portable VQT Test Solution**
Fully portable and self-contained testing solution for performing Voice Quality and Delay measurements. Includes two Bluetooth modules, 4-wire Analog, Wi-Fi, and GPS connectivity. Fully automated and remote-controlled using Console and Console App.

VQT275   **VQuad™ Probe Upgrade**
Upgrade existing VQuad™/Dual UTA into a single self contained unit for unattended testing. Includes PC with failsafe operation. PC portion includes two GBit Ethernet and four external USB Interfaces

VQT279   **VQuad™ Probe Rackmount kit**
Attaches to VQuad Probe to allow VQuad™ Probe to be mounted to a 19' Rack

VQT022   **VQuad™ Fax Emulation (2 simultaneous ports)**
VQT022a   **VQuad™ Fax Emulation (8 simultaneous ports)**
Fax Emulation using Dual UTA interfaces (FXO and 4wire); fax rates from 1200 bps to 33.6 kbps; multiple Dual UTAs possible

For more information, please visit https://www.gl.com/vquad.html

Echo Measurement Utility

Analyzes echo return loss (ERL) and echo path delay (EPD) for 2Wire Analog, VoIP, T1 E1, and Mobile networks. PKB070 is included

VQT035   **Voice Recorder (FXO RJ11 Hardware Tap / 2-Wire Capture Software)**
Used for capturing Audio from RJ11 connections for GL Insight Fax / Modem Analysis, requires Dual UTA or USB T1E1 unit; includes FXO RJ11 Hardware Tap.

VQuad™ NetTest

VQT600   **VQuad™ NetTest Data Server Solution**
Data Quality Measurements including TCP measurements, UDP capacity, VoIP, Route, HTTP, FTP, and DNS; Only one VQT600 required to support entire solution including up to 2500 instances of VQuad™ and or Apple / Android mobile devices

VQT601   **Mobile Device Controller (MDC)**
Apple / Android Mobile Device Apps Remote Control of Apple and Android mobile devices from VQuad™ Script; Apple and Android apps are available at "no charge" (NetQCheck)

VQT610   **Target Data Server (100 Mbps)**
Used in conjunction with VQuad™ / Apple / Android NetTest; provides detailed measurement statistics; many can be deployed simultaneously

Voice Quality Testing Products
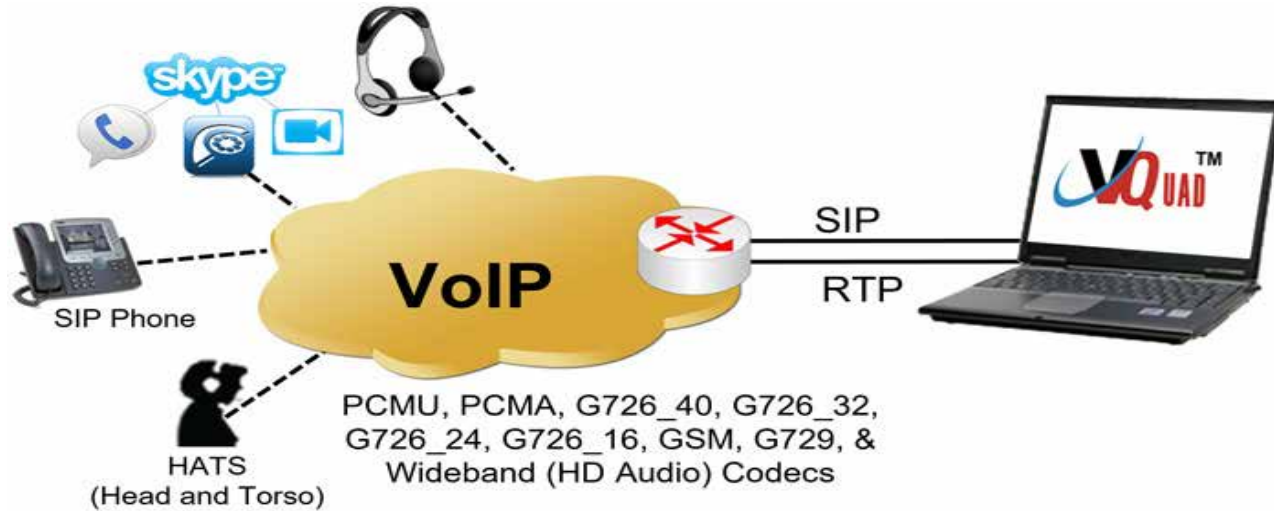
Automated Testing of VoIP (SIP) Interface, Digital VoIP Phones, VoIP Softphones using VQuad™

VQT611   **Target Data Server (1 Gbps)**
Used in conjunction with VQuad / Apple / Android NetTest; provides detailed measurement statistics; many can be deployed simultaneously

VQT620   **GL NetTest VQT - Android app license (supports 4 rooted Android phones per license)**
Requires Rooted Android phone along with VQT601 (MDC) and VQuad for automated control; supports automated Call Control and ability to Send/Record NB/WB voice directly from app for VQT POLQA Analysis

VQT650   **Video Application Controller (VAC)**
VAC includes VAC Server (Linux) and VAC companion software (Windows); Does not include 2 PCs

VQT661   **VAC Windows/Linux Agent, single license**
Windows/Linux Agent, single license, 5 Mbps

VQT662   **VAC Windows/Linux Agent, single license**
Windows/Linux Agent, single license, 10 Mbps

VQT663   **VAC Windows/Linux Agent, single license**
Windows/Linux Agent, single license, 50 Mbps

VQT671   **VAC Android Agent, single license**
Android Agent, single license, 5Mbps

Voice Band Analyzer and Other Options

VBA032   **Voice Band Analyzer**
Analyze voice band parameters e.g. speech level, echo, noise, etc. required for CDR032, requires dongle. PKB070 is included.

VBA033   **2-Wire Echo Analysis for VBA**
Analysis of echo on two-wire captures

VBA035   **E-model Analog Algorithm Option**
2-wire voice band analysis option to VQT WebViewer™ application. Requires VBA032.

Phone: (301) 670-4784   **Fax**: (301) 670-9187   **Email**: info@gl.com

GL Communications Inc.

VBA036   **Traffic Analysis for VBA**
Analysis of voiceband traffic such as tones, fax, and call progress signals, required for CDR032

VBA038   **FaxScan™ for PCM**
Demodulates Voice band Fax Signals (PCM) & then Decodes T.30 Fax Images

PKV104   **FaxScan™ for SIP and Fax over IP (T.38)**
Decodes Fax Images from PCAP files

SA048   **Goldwave Software**
Accessory software for creating and viewing audio files. Desirable for VQuad™ but required for VQT002 and VQT004

mTOP™ Integrated Test Platforms
Refer to mTOP™ Platforms page for more details.

For more information, please visit https://www.gl.com/test-tools-in-rack-based-platforms.html#mtop-vquad

VQT / VQuad™ Support

VQT900   **Extended (2nd Year) VQT Software Upgrades and Comprehensive Support**
Software enhancements and support for subsequent one year increments.

VQT005S   **Extended (Annual) VQT POLQA Software Upgrades and Comprehensive Support**
Software enhancements and support for subsequent one year increments for all permutations of POLQA products

EMU037S   **Extended (Annual) EMU037 Software Upgrades and Comprehensive Support**
Software enhancements and support for subsequent one year increments

VQT040S   **Extended (Annual) VQT040 VQT WebViewer™ Software Upgrades & Comprehensive Support**

VQT041S   **Extended (Annual) VQT041 WebViewer (with Oracle Database) Software Upgrades & Comprehensive Support**

VQT022S   **Extended (Annual) VQT022 VQuad™ Fax Software Upgrades & Comprehensive Support**

VQT600S   **Extended (Annual) VQT600 NetTest Software Upgrades & Comprehensive Support**
Software enhancements and support for subsequent one year increments – for VQT600 and VQT601 combination

VQT601S   **Extended (Annual) VQT601 NetTest Software Upgrades & Comprehensive Support**
Software enhancements and support for subsequent one year increments – for VQT601only

VQT611S   **Extended (Annual) VQT611 NetTest Target Server GB Hardware Warranty**
Hardware Warranty for VQT611

VQT280S   **Extended (Annual) VQT280 VQuad Warranty + Dual UTA HD / VQuad Probe HD Hardware Warranty**
Hardware and Software Warranty for VQT280, Includes Dual UTA HD and VQuad Software Upgrades and Comprehensive Support.

VQT650S   **Extended (Annual) VAC Server Software Upgrades & Comprehensive Support**
Software enhancements and support for subsequent one year increment

VQT661S   **Extended (Annual) VAC 5Mbps Agent Software Upgrades & Comprehensive Support**

VQT662S   **Extended (Annual) VAC 10Mbps Agent Software Upgrades & Comprehensive Support**

VQT663S   **Extended (Annual) VAC 50Mbps Agent Software Upgrades & Comprehensive Support**

VQT671S   **Extended (Annual) VAC 5Mbps Android Agent Software Upgrades & Comprehensive Support**

VQT901   **Reinstatement of Interrupted Support**
Software enhancements and comprehensive support for one year.

VQT902   **Extended (Annual) VQuad™ Software Upgrades & Comprehensive Support**
Includes upgrade from AFT.

VQT903   **Extended Dual UTA or Dual UTA HD Hardware Warranty (2nd Year)**
For Dual UTA (VQT241, VQT251).

VQT910   **VQuad™ / VQT Training**
Software and hardware training.

***** End of Voice Quality Testing Products Section *****

Ethernet / IP / VoIP Products

Ethernet / IP / VoIP Products
Simulation Products

ETH100   **PacketCheck™ (Software Based)**
Allows 10 / 100 / 1000 Ethernet Interface Testing with BERT testing at MAC, IP, and UDP layers; uses PC NIC (requires dongle), on GSA

ETH200   **Dual PacketCheck™**
Two PacketChecks.

For more information, please visit https://www.gl.com/packetcheck.html

Hardware Based Ethernet Tester
Basic Hardware Models

PXE100   **PacketExpert™**
Quad Port 10/ 100/ 1000 Wirespeed Packet Analyzer and Emulator, two with 10/100/1000 electrical, two electrical or optical 1 G, w/ RFC 2544, Y.1564 testing, MPLS, Q-in-Q, and VLAN testing. Also MAC, IP, and UDP BERT Testing with Smart Loopback; Electrical and Optical SFPs optional;

Also available as portable mTOP probe packaged in a more compact design with support for a single GL board i3/i7 Intel NUC

For more information, please visit https://www.gl.com/optical-and-ethernet-testing-packetexpert.html

PacketExpert™ 1G

◈ **GL Communications Inc.**
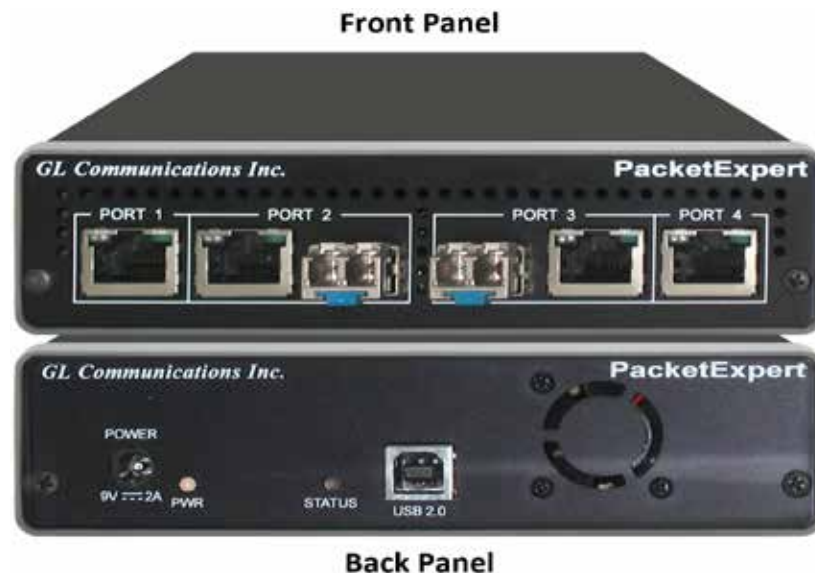
PXN100   **PacketExpert™ 10GX**

Quad Port – Two with 10/100/1000 Electrical, or Two Optical 100M/1G; All Port BERT – 4x1G Ports; RFC 2544 – 2x1G Ports; Y.1564 testing; All Port Smart Loopback – 4x1G Ports; USB 3.0; Optionally 2.5G/10G functionality (costs extra); also optional and extra is a trigger board w/ TTL (up to 12); also optionally available are Electrical and/or Optical SFPs.

Also available as portable mTOP probe packaged in a more compact design with support for a single GL board i3/i7 Intel NUC
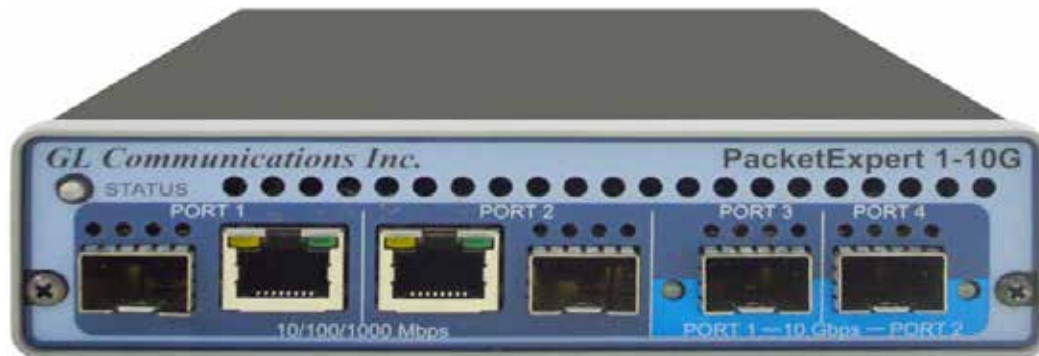
PacketExpert™ 10GX (1G/10G)

PXN101   **2.5G/ 10G option for PXN100**

2.5G/10G option for PXN100: Enables 2.5G or 10G capability for all applications. Number of 2.5G or 10G ports supported varies based on the application.
Note: All Port Bert – 2 2.5G/10G Ports, BERT/Loopback – 1 2.5G/10G BERT + 1 2.5G/10G Loopback, All Port Loopback – 2 2.5G/10G Ports, RFC2544 – 2 2.5G/10G Ports.

PXX100   **PacketExpert™ 100G Platform (1, 10, 25G)**
Lunchbox, 16 GB RAM, 500 GB SSD, Dual Ports QSFP28 Cages with Adapters, Requires PXX101, includes 3-year support & warranty.

Optional Electrical / Optical SFPs (QSFP28, SFP28, and SFP+) and cables
- Approx price varies from - $4 K to $12 K
- depending on MM or SM
- includes loopback plugs, and adapters
- may include multi-rate SFPs
- may include the full complement of rates or just a subset

* Contact us for a detailed quote and conditions

Specifications - Ultra-Portable PacketExpert™ 100G (Lunchbox)
Dimensions - 12.4" H x 16.41" W x 4.39" D
Weight - 16.5 lbs
Expansion slots - Up to 2
Power supply - 400W (optional 500W)
Display - 17.3" 1920x1080

2x1G/10G/25G/100G

Specifications - Portable PacketExpert™ 100G (Lunchbox)
Dimensions - 13.62" H x 16.50" W x 7.25" D
Weight - ~23 LBS (10.4KG)
Expansion slots - Up to 4
Power supply - 680W 100/240VAC
Display - 17.3" 1920x1080

2x(2x1G/10G/25G/100G)

Specifications - PacketExpert™ 100G Flex Pack (Lunchbox)
Dimensions - 17.06" x 13.67" x 9.02" (H x W x D)
Weight - ~30 LBS
Expansion slots - Up to 7
Power supply - 1000W 100-240V 50-60 Hz 80PLUS
Display - 17.3" 1920x1080

4x(2x1G/10G/25G/40G/50G/100G)

Specifications - PacketExpert™ 100G – 4U Rack PC
Dimensions - 6.9" H x 16.9" W x 17.5" D
Weight - 35 lbs
Expansion slots - 7
Display - 1300W

4x(2x1G/10G/25G/40G/50G/100G)

Specifications - PacketExpert™ 100G – 1U Rack PC
Dimensions - 1.7" H x 17.2" W x 9.8" D
Weight - 10 lbs
Expansion slots - 1 x Full-height
Power supply - 200W

2x1G/10G/25G/40G/50G/100G

PXX101 **Basic Software (Required for PXX100)**
BERT, RFC 2544, Y.1564 and Smart Loopback applications over two ports of 1G, 10G and 25G; Required for PXX100 or PXX107.

PXX103 **Basic Software per additional Card**
Up to 4 Cards total per system; Required for PXX107.

PXX105 **40, 50, 100G Optional Software**
Optional software to support additional rates of 40, 50, 100 G per system.

PXX107 **PacketExpert™ 100G - Two Card / 4 Port Platform**
Lunchbox, 16 GB RAM, 500 GB SSD, Quad Ports QSFP28 Cages with Adapters, Electrical / Optical SFPs extra; Requires PXX101

PXX109 **Optional Software for Test Automation using Scripting with client-server APIs**
Testing Automation:
- Automation with Python Scripting using Python Client APIs
- Automation using REST APIs (using any client that supports REST APIs with JSON)

Multi-port Hardware Models

PXE104G **PacketExpert™ (4-Port) - Rackmount**
Includes: 4-Port PacketExpert™ w/ one (1) PXE100, and one (1) mTOP, MT001 enclosure. If options, then 1 per unit (except CLI);

PXN104G **PacketExpert™ 10GX (4-Port) - Rackmount**
Includes: 4-Port PacketExpert™ 10GX w/ one (1) PXN100, and one (1) mTOP MT001 enclosure. If options, then 1 per unit (except CLI);

PXE112G **PacketExpert™ (12-Port) - Rackmount**
Includes: 12-Port PacketExpert™ w/ three (3) PXE100s, and one (1) mTOP, MT001 enclosure. If options, then 1 per unit (except CLI);

PacketExpert™ -SA (12 port)

PXN112G **PacketExpert™ 10GX (12-Port) - Rackmount**
Includes: 12-Port PacketExpert™ 10GX w/ three (3) PXN100s, and one (1) mTOP MT001 units enclosed (If options, then 1 per unit (except CLI));

Phone: (301) 670-4784 **Fax**: (301) 670-9187 **Email**: info@gl.com

◆ *GL Communications Inc.*

Ethernet / IP / VoIP Products

PXE124G   **PacketExpert™ (24-Port) - Rackmount**
Includes: 24-Port PacketExpert™ w/ six (6) PXE100s, and one (1) mTOP MT001 enclosure, and one (1) mTOP MT002 enclosure. If options, then 1 per unit (except CLI);

PacketExpert™ -SA (24 port)

PXN124   **PacketExpert™ 10GX (24-Port) - Rackmount**
Includes: 24-Port PacketExpert™ 10GX w/ six (6) PXN100s, and one (1) mTOP MT001 enclosure, and one (1) mTOP MT002 enclosure. If options, then 1 per unit (except CLI);

Software Options

CXE100   **CLI Server for PXE100**
CLI Server for PXE100 basic and optional software (PXE104, PXE105, PXE106, PXE107, PXE108)

CXN100   **CLI Server for PXN100**
CLI Server for PXN100 basic and optional software (PXN104, PXN105, PXN106, PXN107, PXN108)

PXE105   **Wirespeed Record / Playback – 1G**
Wirespeed Ethernet frame capture and playback - up to 4 ports Simultaneously

PXN105   **Wirespeed Record / Playback – 1G and 2.5G / 10G**
10G or 1G - Wirespeed Ethernet frame capture & playback with timestamp & filter – up to 2 ports

PXE106   **ExpertSAM – 1G**
Single Port test to validate service-level agreements (SLAs) as per ITU-T Y.1564; included with basic hardware;

PXN106   **ExpertSAM™ – 1G and 2.5G / 10G**
1G and 2.5G/10G - Single Port test to validate service-level agreements (SLAs) as per ITU-T Y.1564; included with basic hardware;

PXE107   **PacketBroker - 1G**
Non-intrusive Wirespeed Ethernet Tap w/ advanced filtering for deep packet analysis

PXN107   **PacketBroker™ – 1G and 2.5G / 10G**
1G and 2.5G/10G Non-intrusive Wirespeed Ethernet Tap w/ advanced filtering for deep packet analysis

PXE108   **Multi-Stream UDP/TCP Traffic Generator and Analyzer**
ExpertTCP test methodology, based on the RFC 6349 to measure TCP throughput, RTT and optimal window size. Also includes capability to Generate and Analyze up to 12 UDP streams of traffic of various packet lengths

GL Communications Inc.

PXN108   **Multi-Stream UDP/TCP Traffic Generator and Analyzer 1G and 2.5G / 10G**
ExpertTCP test methodology, based on the RFC 6349 to measure TCP throughput, RTT and optimal window size (1G Only). For 1G and 2.5G/10G capability to Generate and Analyze up to 16 UDP streams of traffic of various packet lengths

mTOP™ Integrated Test Platforms
Refer to mTOP™ Platforms page for more details

For more information, please visit https://www.gl.com/test-tools-in-rack-based-platforms.html#mtop-ethernet-optical-tdm

IPNetSim™ (IP Network Simulator)

IPN507   **IPNetSim & IPLinkSim Options for 1G, 2.5G and 10G**
Imparts packet delay, errors, loss, duplication, reordering, throttling on two electrical 10/100/1000 copper or two optical 1 GigE, or two optical 2.5 GigE or two optical 10 GigE;

IPLinkSim treats the entire path as one bidirectional stream;

IPNetSim treats up to 16 unique bidirectional streams for 1G; up to 4 unique bidirectional streams for 2.5G and 10G;

Available with rack option - see MT001. Requires PXN100 / PXN101 basic hardware & software;

For more information, please visit https://www.gl.com/wan-link-emulation-ipnetsim-iplinksim.html

PCD107   **Optional Codec - AMR - Wideband**
AMR Codec - Wideband

PCD104   **Optional Codec - EVRC**
EVRC Codec

PCD105   **Optional Codec - EVRC-B**
EVRC–B Codec

PCD106   **Optional Codec - EVRC-C**
EVRC-C Codec
PCD108   **Optional Codec - EVS**
EVS Codec

PCD109   **Optional Codec - OPUS**
OPUS Codec

PKS101   **SIP Core (additional)**
2nd and Additional Instances (w/ dongle) PKG100

Ethernet / IP / VoIP Products

RTP Traffic Options (Requires MAPS Signaling Software)

PKS102   **RTP Soft Core (additional)**
2nd and Additional Instances (w/ dongle)

PKS103   **RTP IuUP Softcore**
RTP Voice Traffic Generation over IuUP ; requires PKS102 and PCD103 – Used in UMTS Network at IuCS Interface

PKS200   **RTP Pass Through Fax Emulation**
RTP T.30 Pass-Through Fax Emulation, requires one of the licenses below, (w/dongle):

PKS202   **2 Fax Port Licences**
PKS203   **8 Fax Port Licences**
PKS204   **30 Fax Port Licences**
PKS205   **60 Fax Port Licences**
PKS206   **20 Fax Port Licences**
PKS211   **T.38 Fax Simulation**
T.38 Fax Simulation over UDPTL (up to 120 channels)

PKS107   **RTP EUROCAE ED137B**
RTP Traffic Generation as per ED-137B - Interoperability Standards for VoIP ATM (Air Traffic Management) Components - PKS102 required

PKS108   **RTP Voice Quality Measurements**
RTP Based Voice Quality (MOS and R-Factor) measurement for the received stream – PKS102 required

PKS106   **RTP Video Traffic Generation**
RTP Video Traffic Generation – up to 500 simultaneous video streams using H.264 codecs. Requires PKS102 RTP Softcore

RTP Toolbox

PKB100   **RTP ToolBox™**
Provides VoIP / RTP Simulation and Analysis with SIP signaling (w/dongle)

For more information, please visit https://www.gl.com/rtptoolbox.html

PKB105   **G.168 Echo Canceller Test Compliance Suite**
Supports manual G.168 Echo Canceller Test Compliance Procedures and Codec Files (w/dongle to enable GLCView); includes PKB070.

PKB110   **Client / Server for RTP Toolbox™**
Remote Control of RTP Traffic over IP Networks, uses TCP/IP (w/dongle), requires PKB100; w/ C++ Client, w/ TCL Client

GL Communications Inc.

Ethernet / IP / VoIP Products

MAPS™ (Message Automation and Protocol Simulation) Protocol Simulation and Conformance Tool for IP

For more information, please visit https://www.gl.com/signaling-and-traffic-simulator.html

PKS109 **MAPS™ High Density RTP Generator**
High Density RTP Call Generator w/ 4x1GigE Network Appliance, emulates greater than 20,000 endpoints; requires companion MAPS PKSXXX signalling product; includes PKS102; for other traffic options e.g. fax, codecs, video, refer "RTP Traffic Options" section; SFPs optional.

MAPS™ HD

PKS111 **MAPS™ Remote Controller**
MAPS GUI client to control single or multiple MAPS instances

PKS112 **Message Session Relay Protocol for MAPS SIP**
MSRP protocol emulation for supporting session based instant messaging capability over SIP; sessions requires PKS120

PKS113 **MAPS Multi User License for 4 Users**
MAPS Server with multiuser capability (upto 4 users)

PKS114 **MAPS Multi User License for 10 Users**
MAPS Server with multiuser capability (upto 10 users)

PKS170 **CLI Support for MAPS**
CLI Support for MAPS Products, includes TCL, Java, Python, and C#

PKS116 **MAPS Administrator for ATM (Air Traffic Management) Test Beds**
Includes pre-developed scripts to remote control of different components (PacketAnalyzer, AudioAnalyzer, Packetizer, Event Data Logger, Discrete Signal Logger and others) of the TM-ATM solution.t

PKS117 **MAPS for ED137 Recorder**
MAPS for ED137 Recorder Emulation. Emulates Recorder interface as per ED-137B volume 4 defined by EUROCAE Working Group 67 (includes PKS102). Permits emulation of Recorder Interface at CWP/VCS, GRS, and Recorder elements.

PKS118 **MAPS™ SIP for ED137 Radio**
MAPS SIP for ED137 Radio Emulation. Emulates Air-to-Ground calls in Air Traffic Management defined by EUROCAE Working Group 67, volume discounts available for 2,3,4,5 units (includes PKS102 and PKS107); Not included, but required platform - Win 7/64, i7,8 GB, Gigabit NIC, with Administrative Level Privilege to Install and Run Application, USB Port Dongle

PKS119   **MAPS™ SIP for ED137 Telephone**
MAPS SIP for ED137 Telephone Emulation. Emulates Ground-to-Ground calls in Air Traffic Management defined by EUROCAE Working Group 67, volume discounts available for 2,3,4,5 units (includes PKS102); Not included, but required platform - Win 7/64, i7,8 GB, Gigabit NIC, with Administrative Level Privilege to Install and Run Application, USB Port Dongle

PK1191   **Addendum 1: Legacy Telephone Interworking ATS-R2, ATS-No.5 and ATS-QSIG**
Simulates SIP User Agents to interwork with Legacy Telephone ATS-R2, ATS-No5 and ATS-QSIG as per ED-137 Volume 2 Telephone Addendum 1; Requires PKS119.

PK1192   **Addendum 2: FAA Legacy Telephone Interworking**
Simulates SIP User Agents to interwork with FAA Legacy Telephone as per ED-137 Volume 2 Telephone Addendum 2; Requires PKS119.

PK1193   **Addendum 3: Instantaneous Access Call**
Simulates Instantaneous Access calls as per ED-137 Volume 2 Telephone Addendum 3; Requires PKS119.

PK1194   **Addendum 4: Override Call**
Simulates Override calls as per ED-137 Volume 2 Telephone Addendum 4; Requires PKS119.

PK1195   **Addendum 5: Voice Call**
Simulates Voice calls as per ED-137 Volume 2 Telephone Addendum 5; Requires PKS119.

PK1196   **Addendum 6: Extended Call Forward**
Simulates Extended Call Forward features as per ED-137 Volume 2 Telephone Addendum 6; Requires PKS119.

PK1197   **Addendum 7: Hotline Access Call**
Simulates Hotline Access calls as per ED-137 Volume 2 Telephone Addendum 7; Requires PKS119.

PK1198   **Addendum 8: Radio Intercom Call**
Simulates Radio Intercom calls as per ED-137 Volume 2 Telephone Addendum 8; Requires PKS119.

PKS120   **MAPS™ SIP**
SIP Protocol Emulation; For traffic options refer "RTP Traffic Options" section;

PKS121   **SIP Conformance Test Suite**
SIP Conformance Test Scripts, includes PKS120

PKS126   **MAPS™ SIP-I**
SIP – I Protocol Emulation, Similar to MAPS SIP but can carry ISUP content as MIME body; For traffic options refer "RTP Traffic Options" section;

PKS127   **MAPS™ SIP-IMS**
Additional SIP Features for IMS Support

PKS122   **MAPS™ Megaco**
Megaco Protocol Emulation, For traffic options refer "RTP Traffic Options" section;

PKS123   **Megaco Conformance Test Suite**
Megaco Conformance Test Scripts, requires PKS122.

PKS124   **MAPS™ – MGCP Protocol Emulation with Conformance**
Test Suite Provides MGCP Protocol Emulation (Bulk Calling); optional PKS102 for traffic emulation, requires PKS125

PKS130　**MAPS™ SIGTRAN SS7 Over IP**
SIGTRAN Protocol Emulation – SS7(ISUP) over M3UA, M2UA and M2PA IP transport layers; optional xx610 and xx620 for TDM traffic generation (refer TDM Hardware & Software Products); TDM Fax emulation supported   (Optional - Refer XXFT0) (refer TDM Hardware & Software Products)

PKS135　**MAPS™ SIGTRAN ISDN over IP**
SIGTRAN Protocol Emulation – ISDN over IUA IP transport layer; optional xx610 and xx620 for TDM traffic generation (refer TDM Hardware & Software Products); TDM Fax emulation supported (Optional - Refer XXFT0) (refer TDM Hardware & Software Products)

PKS136　**MAPS™ SIGTRAN SS7 INAP**
SIGTRAN Protocol Emulation – SS7 INAP (CS1 and CS2) over M3UA, and M2PA IP transport layers

PKS152　**MAPS ™ – SIGTRAN ANSI MAP**
SIGTRAN Protocol Emulation - IS-41 over IP on B, C, E, F, H, Q, and N interfaces

PKS300　**MAPS™ Multi-Interface MGC**
Media Gateway Controller Emulation with SIGTRAN, MGCP, and Megaco interfaces; includes MAPS licenses for ISUP SIGTRAN (PKS130) for SG and MGCP (PKS124) or Megaco (PKS122) licenses for MG simulation; Does not include RTP Licenses*;

PKS301　**MAPS - LTE Multi-Interface Emulation**
GL recommends purchasing additional MG simulation using PKS124 or PKS122 with appropriate RTP licenses for traffic simulation. For traffic options refer "RTP Traffic Options" section

PKS302　**MAPS - UMTS Multi-Interface Emulation**
MME, SGW & PGW emulation to emulate complete LTE LAB. Requires additional protocol licenses

PKS303　**MAPS - GSM Multi-Interface Emulation**
HNGBW, MSC, SGSN, GGSN, MGC Node emulation to emulate complete UMTS LAB. Requires additional protocol licenses

PKS305　**MAPS - 5G Multi-Interface Emulation**
5G Multi-Interface Emulation support for AMF, UDM, SMF, AUSF and SMSF Nodes to emulate complete 5G Core network (5G Lab) . Requires additional interface licenses

PKS132　**MAPS™ MAP**
BSC, MSC, SGSN, MGC Node emulation to emulate complete GSM/GPRS LAB. Requires additional protocol licenses

PKS147　**MAPS Lb Interface Emulator**
Emulates BSC & SMLC over Lb Interface

PKS148　**MAPS SLs Interface Emulator**
Emulates MME & E-SMLC over SLs Interface

PKS153　**MAPS IuPC Interface Emulator**
Emulates SRNC & SMLC over IuPC Interface

PKS151　**MAPS™ CAP Emulation over IP**
Customized Application for Mobile Network Enhanced Logic – CAMEL Application Part (CAP) over M3UA,and M2PA IP transport layers

PKS155　**MAPS™ BICC Emulation**
BICC Protocol Emulation, optional PKS102 for traffic emulation over M3UA and M2PA IP transport layer; For traffic options refer "RTP Traffic Options" section

PKS134 **MAPS™ Abis Emulator over IP**
BSC to BTS Abis Emulation over TCP transport layer; For traffic options refer "RTP Traffic Options" section

PKS137 **MAPS™ GSM A Emulation over IP**
BSC to MSC A interface emulation over M3UA IP transport layer; For traffic options refer "RTP Traffic Options" section

PKS131 **MAPS™ Gb Emulator over IP for BSC & SGSN**
Gb interface emulation between BSC & SGSN; For traffic options refer "GTP Traffic Options" section

PKS139 **MAPS™ Diameter Emulator Base License**
Emulates Diameter protocol (Supports S6a (HSS-MME), S13 (MME-EIR), S13 (SGSN-MEIR) etc. interfaces over TCP and SCTP transport layer)

PK1390 **MAPS Diameter CxDx Interface Emulator**
Emulates Home Subscriber Server (HSS), I/S Call Session Control function (CSCF) to download user profiles and upload user-to-S-CSCF associations. All necessary subscriber profile information is loaded from the HSS; requires PKS139 base license

PK1391 **MAPS Diameter Gx Interface Emulator**
Emulates Policy control Enforcement Function (PCEF) and Policy and Charging Rules Function (PCRF) to support provisioning and removal of Policy and Charging Rules and transmission of traffic plane events; requires PKS139 base license

PK1392 **MAPS Diameter Gy Interface Emulator**
Emulates PDN GW (ChargingTrigger Function) and Online charging System (OCS) to support real-time content-based charging of data services; requires PKS139 base license

PK1393 **MAPS Diameter Rf Interface Emulator**
Emulates IMS Charging Trigger Function (CTF) and Charging Data function (CDF) to support Session based and event based offline charging; requires PKS139 base license

PK1394 **MAPS Diameter Ro Interface Emulator**
Emulates IMS Charging Trigger Function (CTF) and Online Charging System (OCS) to support Session based and event based online charging; requires PKS139 base license

PK1395 **MAPS Diameter Rx Interface Emulator**
Emulates Policy and Charging Rules Function (PCRF) and Application Function (AF) to support Flow based charging control; requires PKS139 base license

PK1396 **MAPS Diameter Sh Interface Emulator**
Emulates Home Subscriber Server (HSS) and Application Server (AS) to query or update user's data stored in HSS (XML profile); requires PKS139 base license

PK1397 **MAPS Diameter SLg Interface Emulator**
Emulates GMLC and MME supporting subscriber location service; requires PKS139 base license

PK1398 **MAPS Diameter SLh Interface Emulator**
Emulates GMLC and HSS supporting LCS Routing service; requires PKS139 base license

PK1399 **MAPS Diameter Zh Interface Emulator**
Emulates Bootstrapping server Function (BSF) and Home Subscriber Server (HSS) to Fetch authentication vectors and User security settings from HSS; requires PKS139 base license

PKS140 **MAPS™ LTE - S1 Interface Emulator**
MAPS LTE – S1 Interface Emulation, between eNodeB and MME; For traffic options refer "GTP Traffic Options" section

Ethernet / IP / VoIP Products

PKS142 **MAPS™ LTE - eGTP Emulation (S5/S8 S11 Interfaces)**
MAPS LTE – eGTP Emulation (S5 / S8 and S11 Interfaces), between SGW and PGW or between MME and SGW; For traffic options refer "GTP Traffic Options" section

PKS141 **MAPS™ LTE – X2AP Emulation**
X2AP Interface Emulation between eNodeBs

PKS146 **MAPS™ SGs Interface Emulation**
SGs Interface Emulation support for CS fallback features

PKS143 **MMS Server**
MMS Server – 10 simultaneous messages / min

PKS144 **Central Control Center for GSM**
Central Control Center for GSM Networks

PKS145 **MSC / BSC Media Gateway**
Media Gateway (within BSC or MSC) for conversion b/w E1 and IP

PKS160 **MAPS™ UMTS - IuCs and Iuh Interface Emulation**
IuCs and Iuh Interface Emulation, between RNC and MSC or between HNB-GW and HNB; For CS (Circuit Switch) traffic options refer "RTP raffic Options" section; For PS (Packet Switch) traffic options refer "GTP Traffic Options" section

PKS164 **MAPS™ UMTS - IuPs Interface Emulation**
MAPS UMTS – IuPs Interface Emulation, between RNC and   SGSN; For traffic options refer "GTP Traffic Options" section

PKS166 **MAPS™ UMTS - GnGp Interface Emulation**
MAPS UMTS – Gn Interface Emulation; For traffic options refer "GTP Traffic Options" section

PKS154 **LTE S1 and X2 Conformance Test Suite**
LTE S1 and X2 Conformance Test Scripts, requires PKS140 for S1 Conformance testing or PKS141 for X2 Conformance testing; as per 3GPP TS 36.413 (LTE S1) and as per TS 36.423 (LTE X2) specifications;

BTS001_S **Real BTS GSM Cell for 2G and 2.5 G**
Real BTS hardware with Abis over IP; up to 8 Tx/Rx channels (approx)

BTS001_B **Real Node B for 3G Systems**
Real Node B hardware for 3G systems (approx.)

BTS001_E **Real eNodeB for 4G (LTE) Systems**
Real eNodeB hardware for 4G (LTE) systems (approx..)

BTS001_gm **Real gNodeB for 5G Systems – Mini**
Real gNodeB-mini hardware for 5G systems (approx.); Supports up to 500 UE, Uplink of 75 Mbps and Downlink of 200 Mbps

BTS001_gc **Real gNodeB for 5G Systems – Classic**
Real gNodeB-classic hardware for 5G systems (approx.); Supports up to 1000 UE, Uplink of 150 Mbps and Downlink of 600 Mbps

UE002 **5G Smartphone**
5G Smartphone for BTS001_gc and BTS001_gm

UE003 **SIM for 5G Smartphone**
SIM for 5G Smartphone UE002

GL Communications Inc.

GTP Traffic Options

ETH101 **Mobile Traffic Core - GTP**
Generates and Verifies User Mobile Data Traffic over GTPv1 and GTPv2 (Used with UMTS and LTE) (for simulated HTTP traffic generation over GTP)

ETH102 **Mobile Traffic Core - Gateway**
Emulate SGSN / SGW (GTP to GTP) and GGSN / PDN-GW (GTP to IP) (acts as a real gateway)

ETH103 **MobileTrafficCore for Gb Interface**
Generates and verifies hundreds to thousands of sessions of http, ftp, etc. user mobile data traffic over GPRS Gb interface (for simulated HTTP traffic generation over IP)

Data Traffic Generators

PKS172 **PacketLoad™ 4 x 1Gig, Data Traffic Generator**
Data Traffic Generator - 1U Rack Appliance, 4 x 1Gbps, Wirespeed TCP/HTTP Statefull Traffic Generator with 445 K Transactions / Sec, 20M+ Concurrent TCP Flows, HTTP Payload Control using Custom Payload Files, PCAP ReplayEmulates Mobile Infrastructure Test Traffic with GTP-U   Encapsulation while 10K+ Subscribers Add/Delete per Second along with MAPS System.

PacketLoad™-1G

PKS174 **PacketLoad™ 4 x 10Gig, Data Traffic Generator**
Data Traffic Generator - 2U Rack Appliance, 4 x 10Gbps,Wirespeed TCP/HTTP Statefull Traffic Generator with 2M+ Transactions/Sec, up to 100M Concurrent TCP Flows, HTTP Payload Control using Custom Payload Files, PCAP Replay. Emulates Mobile Infrastructure Test Traffic with GTP-U Encapsulation while 10K+ Subscribers Add/Delete per Second along with MAPS System.

PacketLoad™-10G

For more information, please visit https://www.gl.com/packetload-high-density-traffic-simulation-using-maps.html

5G Interface Emulation

PKS500   **5G N1/N2 Interface Emulation**
5G N1/N2 Interface Emulation, between gNB & AMF; for traffic options, refer to "GTP Traffic Options

PKS501   **5G N4 Interface Emulation**
Emulates SMF & UPF on N4 interface

PKS502   **5G Service based Emulation**
Prerequisite base license for all service based (Open API) interface emulations.

PKS503   **5G N8 Interface Emulation**
Emulates AMF & UDM on N8 interface. Requires PKS502

PKS504   **5G N10 Interface Emulation**
Emulates SMF & UDM on N10 interface. Requires PKS502

PKS505   **5G N11 Interface Emulation**
Emulates AMF & SMF on N11 interface. Requires PKS502

PKS506   **5G N12 Interface Emulation**
Emulates AMF & AUSF on N12 interface. Requires PKS502

PKS507   **5G N13 Interface Emulation**
Emulates AUSF & UDM on N13 interface. Requires PKS502

PKS508   **5G N20 Interface Emulation**
Emulates AMF & SMSF on N20 interface. Requires PKS502

PKS509   **5G N21 Interface Emulation**
Emulates SMSF & UDM on N21 interface. Requires PKS502

PKS510   **5G N22 Interface Emulation**
Emulates AMF & NSSF on N22 interface. Requires PKS502

PKS511   **5G N29 and N51 Interface Emulation**
Emulates Network Exposure Function (NEF), Session Management Function (SMF) & Access and Mobility Function (AMF) on N29 & N51 interfaces

Accessories for Optical and Ethernet Products

IPN1310　　**SFP Transceiver for OC-3/STM-1 and OC-12/STM-4 Optical, LC, Single-Mode, 1310nm**
Generic SFP for Optical, Duplex LC Connector SM, 1310nm, IR (Intermediate Range, 15 km).

IPN850a　　**SFP Transceiver for OC-3/STM-1 and OC-12/STM-4 Optical, LC, Multi-Mode, 850 nm or 1310 nm**
NEEDS UPDATE – Do Not Quote - Generic SFP for Optical, Duplex LC Connector, MM, 850 nm or 1310 nm, SR (Short Range, 550m)

SA019a　　**Fiber Optic Cable, Single-Mode, Duplex LC to LC, 2m**
2m FO Jumper, 9/125 SM, Duplex LC-LC, Ø2mm

SA019b　　**Fiber Optic Cable, Single-Mode, Duplex LC to SC, 2m**
2m FO Jumper, 9/125 SM, Ø2mm

SA019c　　**Fiber Optic Cable, Multi-Mode, Duplex LC to LC, 2m**
2m FO Jumper, 50/125 MM, OM3 (10G), Ø2mm

SA019d　　**Fiber Optic Cable, Multi-Mode, Duplex LC to SC, 2m**
2m FO Jumper, 50/125 MM, OM3 (10G), Ø2mm

SA019st　　**Fiber Optic T-tap, Duplex LC, Single-Mode**
Fiber Optic T-tap for Non-Intrusive Monitoring, Duplex LC Connectors, 9/125 SM, 70/30 split, includes one SA019a; requires

SA019sc　　**Fiber Optic Analyzer Cable, Single-Mode, Duplex LC to Dual Duplex LC, 3m**
3m FO Jumper, 9/125 SM, Duplex LC-Dual Duplex LC, Ø3mm, Special Analyzer Cable for use with SA019st

SA019mt　　**Fiber Optic T-tap, Duplex LC, Multi-Mode**
Fiber Optic T-tap for Non-Intrusive Monitoring, Duplex LC Connectors, 50/125 MM, 70/30 split, includes one SA019c; requires one SA019mc

SA019mc　　**Fiber Optic Analyzer Cable, Multi-Mode, Duplex LC to Dual Duplex LC, 3m**
3m FO Jumper, 50/125 MM, Duplex LC-Dual Duplex LC, Ø3mm, Special Analyzer Cable for use with SA019mt

Packet Analyzers

PKV100 **PacketScan™ (Online and Offline)**
This is an real-time VoIP analysis software (w/ dongle)Includes decodes for transport (TCP,UDP, IP), Signaling (SIP, Megaco, MGCP, Diameter), and media (RTP, RTCP, Fax, Video).Supported Codecs include G.711, G.726, G.729 A/B, GSM, iLBC, Speex, G.722.2, G.711 / G.726 Appendix 2 Additional Protocol Decode Support for – SIGTRAN, GSM over IP, UMTS over IP, and LTE available with purchase of licenses.

For more information, please visit https://www.gl.com/packetscan-all-ip-packet-analyzer.html

PKV200 **TCP Analytics (Optional with PacketScan™)**
Analysis of TCP Open Connections, Closed Connections, Orphan Connections and TCP Server, Client Connections Summary; Requires either PKV100 or PKV120/PKV122

PKV110 **IMS Protocol Decodes (Optional with PacketScan™)**
IMS (IP Multimedia Subsystem) protocol decodes

PKV111 **Gateway/Router Performance Metrics**
Router / Gateway Delay Measurements

PKV112 **5G Analyzer (Optional with PacketScan™)**
Analysis/Decode of 5G protocols (w/dongle to enable 5G Analysis, requires PKV100)

PKV113 **Offline 5G Analyzer (Optional with PKV101 (offline PacketScan™) and PKV170 (NetsurveyorWeb™))**
Analysis/Decode pre-captured traffic (w/dongle to enable Offline Version)

PKV120 **PacketScan HD™ w/4 x 1GigE**
High Density IP Traffic Analyzer w/ 4x1GigE Network Monitoring Appliance; Single Processor, 16 GB, 500 GB SSD – minimum configuration; Includes Ethernet Cables and Electrical SFPs; Optical SFPs and FO Cables extra;

PKV120p **PacketScan HD™ w/4 x 1GigE - Portable**
High Density IP Traffic Analyzer w/ 4x1GigE Network Monitoring Portable Version; 16 GB, 500 GB SSD, includes Pelican Case, Ethernet Cables, and Electrical SFPs; Optical SFPs and FO Cables extra;

PKV122 **PacketScan HD™ w/2 x 1/10GigE**
High Density IP Traffic Analyzer w/ 2x 1 or 10GigE Network Monitoring Appliance; 2 Processor Xeon, 32 GB, 500 GB SSD – minimum configuration; Multi-rate Optical SFPs included; 4x 1G/10G also available (call for price); Additional SFPs and FO cables extra.

PKV122p **PacketScan HD™ w/2 x 1/10 GigE - Portable**
High Density IP Traffic Analyzer w/ 2x 1 or 10GigE Network Monitoring Portable Version; includes Pelican Case and Multi-rate Optical SFPs, 4x 1G/10G also available (call for price); Additional SFPs and FO cables extra.

PKV124 **PacketScan HD™ w/40/100 GigE**
High Density IP Traffic Analyzer w/ two 40/100 GigE Network Monitoring Appliance; includes 40/100 GigE interface cables and Optical SFPs as required

PKV124P **PacketScan HD™ w/40/100 GigE Portable**
High Density IP Traffic Analyzer w/ two 40/100 GigE Network Monitoring Portable Version; includes 40/100 GigE interface cables and Optical SFPs as required, and Pelican Case

PKV125 **PacketScanPX™**
Interworking software for PacketScan and PacketExpert 10GX; requires PKV100; requires high end SA005d; also requires PXN100, PXN105; optional PXN101 for 10 GigE operation; SFPs optional.

PKV125G1　**PacketScanPX™+PacketExpert™10GX – 1G**
Includes: SA005d, PXN100, PXN105, PKV100, PKV125; excluding accessories, NetSurveyorWeb or NetSurveyorWeb Lite

PKV12510G　**PacketScanPX™+PacketExpert™10GX – 10G**
Includes: SA005d, PXN100, PXN101, PXN105, PKV100, PKV125; excluding accessories, NetSurveyorWeb or NetSurveyorWeb Lite

PKV123　**FastRecorder™ and PacketExtractor™**
Includes four modules; FastRecorder & PacketExtractor provide extreme wirespeed IP traffic filtering and recording up to 100 Gbps direct to disk and offline filtering, extraction, and analysis; supports 4 x 1 Gbps or 2 or 4 x 1/10 Gbps or 2 x 25/40/100 or 8 x 10 Gbps Ethernet Interfaces; PacketRecorder & PacketReplay provide record & playback of IP traffic up to 10Gbps; requires any "one" of PKV120, PKV120p, PKV122, PKV122p, PKV124, PKV124p

PKV121　**PacketScan FB™**
File Based IP Traffic Analyzer Server for near real-time processing of traces

PKV301　**LAN Switch w/ Mirror Port**
NetGear GS105E - 5 Port 10/100/1000LAN switch with mirror port

PKV103　**IP Based GSM and UMTS Analyzer**
(Optional with PacketScan™) Decodes GSM & UMTS protocols over IP transport (w/dongle to enable GSM & UMTS analysis, require PKV100)

PKV105　**SIGTRAN Analyzer (Optional with PacketScan™)**
Provides IP decode of SS7 and ISDN signaling (w/dongle to enable SIGTRAN, requires PKV100).

PKV106　**Offline SIGTRAN Analyzer (Optional w/ PacketScan™ Offline)**
Decodes/Analyzes pre-captured SIGTRAN files (w/dongle to enable Offline Analyzer, requires PKV101).

PKV107　**LTE Analyzer (Optional w/ PacketScan™)**
Analysis/Decode of broadband wireless 4G protocols (w/ dongle to enable LTE, optional with PKV101 Offline PacketScan™ and PKV170 NetSurveyorWeb™)

PKV108　**Offline LTE Analyzer (Optional w/ PacketScan™ Offline)**
Decodes/Analyzes pre-captured LTE files (w/dongle to enable Offline Analyzer, optional with PKV101 Offline PacketScan™ and PKV170 NetSurveyorWeb™ base software for LTE Decode/ Analysis)

Ethernet / IP / VoIP Products

Network Monitoring Software Options

PKV169   **Network Surveillance Lite Software**
Probe Level WebServer for - all Protocol analyzers (T1 E1, OC-3/STM-1, OC12/ STM-4, T3 E3, and PacketScan™), can be used only with Probe PC itself; includes Oracle 11g Express Edition; requires respective real-time protocol analyzer licenses on the Probe PC based on the protocol selection; limited to 9GB CDR storage.

PKV170   **Network Surveillance Base Software (Perpetual License, Unlimited Users/Nodes)**
– Includes Standard Server-Grade
Centralized Database Engine and Client – works with Protocol Analyzers,
- includes database,
- requires either PKV180/PKV181
- requires protocol analyzer licenses and CDR licenses based on the protocol selection (all on the NetsurveyorWeb™ System) – see PacketScan™ CDR, and protocol options
- protocol analyzer license options available – PKV175, PKV172, PKV173, PKV176, PKV092, PKV174, PKV177, PKV178 (see below for details)

PKV175   **T1 E1 Physical Line Monitoring Option for Network Surveillance**
Provides T1 E1 Physical Layer Status with Network Surveillance Solution; requires PKV170 at the central site

PKV172   **ISDN Call Detail Record (CDR) Option for Network Surveillance**
Provides ISDN/SIGTRAN CDR option for Network Surveillance Base Software (PKV170) - requires OLV100 at the central site

OLV100   **Offline / Remote ISDN Analyzer**
Decode / Analyze ISDN option for Network Surveillance Base Software
OLV120   **Offline / Remote SS7 Analyzer**
Decode / Analyze SS7 option for Network Surveillance Base Software

PKV173   **SS7/SIGTRAN Call Detail Record (CDR) Option for Network Surveillance**
Provides SS7 (ISUP and MAP) /SIGTRAN CDR option for Network Surveillance Base Software (PKV170) - requires OLV120 for SS7 and PKV106 for SIGTRAN at the central site

PKV106   **Offline / Remote SIGTRAN Analyzer**
Decode / Analyze SIGTRAN option for Network Surveillance Base Software

PKV092   **CAS Call Detail Records (CDR) Option for Network Surveillance**
Provides CAS CDR option for Network Surveillance Base Software – requires PKV170 and OLV092

OLV092   **Offline/Remote CAS Analyzer**
Provides CAS CDR option for Network Surveillance Base Software (PKV170) – requires OLV092 at the central site

PKV174   **GSM (TDM or IP) & TRAU Call Detail Record (CDR) Option for Network Surveillance**
Provides GSM (TDM and IP) & TRAU (TDM) CDR option for Network Surveillance Base Software (PKV170) - requires OLV150 for GSM; and OLV153 for TRAU at the central site.

OLV150   **Offline / Remote GSM Analyzer**
Decode / Analyze GSM option for Network Surveillance Base Software

OLV153   **Offline / Remote TRAU Analyzer**
Decode / Analyze TRAU option for Network Surveillance Base Software

PKV176   **Provides VoIP Protocol (SIP, MGCP, Megaco etc.) CDR option for Network Surveillance Base Software**
Requires SIP, Megaco, MGCP, H323, RTP Specific Software at Probe Level; requires PKV170 and PKV101

GL Communications Inc.

PKV101   **Offline / Remote PacketScan Analyzer**
Requires SIP, Megaco, MGCP, H323, RTP Protocol Decodes at Central Site (w/ dongle) - requires PKV170 and PKV176

PKV177   **Provides UMTS Protocol (IuCS and IuPS) CDR option for Network Surveillance Base Software**
Requires UMTS IuCS, UMTS IuPS Specific Software at Probe Level; requires PKV109 at the central site.

PKV109   **Offline IP Based GSM and UMTS Analyzer (Optional with PacketScan™)**
Decode / Analyze UMTS option for Network Surveillance. Optional with PKV101 Offline PacketScan™ and PKV170 Network Surveillance Base Software for GSM and UMTS Decode / Analysis;

PKV178   **Provides LTE Protocol CDR option for Network Surveillance Base Software**
Requires LTE Specific Software at Probe Level; requires PKV108 at the central site

PKV108   **Offline LTE (Long Term Evolution) Analyzer (Optional with PacketScan™)**
Decode / Analyze LTE option for Network Surveillance Base Software

PKV171   **Network Surveillance Agent Toolkit**
Documentation, sample code (C++), and technical support for real-time connection to probes; works with GL's Protocol Analyzers

VBA032   **Voice Band Analyzer**
Analyze voice band parameters e.g. speech level, echo, noise, etc. – requires PC and dongle

VoIP Air Traffic Management

ATM501   **MAPS Administrator (no VQT)**
Includes the following items
a. SA500n - Rack PC, 1U, Xeon
b. PKS116 - MAPS Administrator for ATM Test Beds

ATM501a   **MAPS Administrator with VQT (POLQA)**
Includes the following items
a. SA500n - Rack PC, 1U, Xeon
b. PKS116 - MAPS Administrator for ATM Test Beds
c. VQT006 - w/ POLQA Server license (no limitations)

ATM501b   **MAPS Administrator with VQT (PESQ)**
Includes the following items
a. SA500n - Rack PC, 1U, Xeon
b. PKS116 - MAPS Administrator for ATM Test Beds
c. VQT002 - w/ PESQ license

ATM501c   **MAPS Administrator with VQT (POLQA)/(PESQ)**
Includes the following items
a. SA500n - Rack PC, 1U, Xeon
b. PKS116 - MAPS Administrator for ATM Test Beds
c. VQT006 - w/ POLQA Server license (no limitations)
d. VQT002 - w/ PESQ license

ATM502   **MAPS ED137 Radio Emulator (w/Host Server)**
Includes the following items
a. SA500n - Rack PC, 1U, Xeon
b. PKS118 - MAPS SIP for ED137 Radio
c. PKS170 - CLI Support

ATM502b   **MAPS ED137 Telephone Emulator (w/Host Server)**
Includes the following items
Includes the following items
a. SA500n - Rack PC, 1U, Xeon
b. PKS119 - MAPS SIP for ED137 Telephone
a. PKS170 - CLI Support

ATM502c   **MAPS ED137 Recorder Emulator (w/Host server)**
Includes the following items
a. SA500n -Rack PC, 1U Xeon
b. PKS117 – MAPS SIP for ED137 Recorder

ATM503   **1-Port Audio Analyzer with 4 TTL**
Includes the following items
a. MT001 - mTOP 1U Rack Mount Enclosure w/ SBC
b. VQT251 - Dual UTA HD
c. VQT010 - VQuad
d. VQT245 - Dual UTA - 4-Port TTL Option
e. 4 x SA007q – SMA / BNC Cables

ATM503a   **2-Port Audio Analyzer w 8 TTL**
Includes the following items
a. MT001 - mTOP 1U Rack Mount Enclosure w/ SBC
b. VQT251 - Dual UTA HD
c. VQT010 - VQuad
d. 2 x VQT245 - Dual UTA - 4-Port TTL Option
e. 8 x SA007q -- SMA / BNC Cables

ATM503b   **4-Port Audio Analyzer with 16 TTL**
Includes the following items
a. MT001 - mTOP 1U Rack Mount Enclosure w/ SBC
b. 2x VQT251 - Dual UTA HD
c. VQT010 - VQuad
d. 4x VQT245 - Dual UTA - 4-Port TTL Option
e. 16 x SA007q – SMA / BNC Cables

ATM503p   **2-Port Portable Audio Analyzer with 8 TTL**
Includes the following items
a. MT005 - mTOP Probe
b. VQT251 - Dual UTA HD
c. VQT010 - VQuad
d. 2 x VQT245 - Dual UTA - 4-Port TTL Option
e. 8 x SA007q -- SMA / BNC Cables
f. Additional customization involved

ATM504R   **Packet Analyzer, rack version**
Includes the following items
a. MT001 - mTOP 1U Rack Mount Enclosure w/ SBC
b. PXN100 - PacketExpert 10GX
c. PXN107 - PacketBroker NextGen
d. 3 x VQT245 - 4-Port TTL Option for Dual UTA
e. CXN100 – CLI Server
f. 12 x SA007q – SMA / BNC Cables
g. SA066 – GPS Receiver with precision time stamping
h. SA067 – USB 3.0 NIC

* Note: Daisy-chained reference clock time stamping is supported

---

ATM504P　　**Packet Analyzer, probe version**
Includes the following items
a. MT005E - mTOP Probe with i7 SBC
b. PXN100 - PacketExpert 10GX
c. PXN107 - PacketBroker NextGen
d. 3 x VQT245 - 4-Port TTL Option for Dual UTA
e. CXN100 – CLI Server
f. 12 x SA007q – SMA / BNC Cables
g. SA066 – GPS Receiver with precision time stamping
h. SA067 – USB 3.0 NIC

* Note: Daisy-chained reference clock time stamping is sup-ported

ATM506　　**Discrete Signal Logger with 96 Ports (PXN)**
Includes the following items
a. MT001 - mTOP 1U Rack Mount Enclosure w/ SBC
b. PXN100 - PacketExpert
c. PXN107 - PacketBroker
d. 3 x VQT245 - 4-Port TTL Option for Dual UTA
e. CXN100 – CLI Server
f. 12 x SA007q – SMA / BNC Cables
g. SA052 - 2 x Sensoray 48-Channel Digital I/O interface with termination board and power supply
h. SA066 – GPS Receiver with precision time stamping
i. SA067 – USB 3.0 NIC

ATM507　　**IPNetSim w Enhanced PacketExpert 10G / 1G**
Includes the following items
a. MT001 - mTOP 1U Rack Mount Enclosure w/ SBC
b. PXN100 - PacketExpert 10GX
c. IPN507 - IPNetSim Option for PXN100
d. CXN100 – CLI Server

ATM508　　**PacketScan Analysis (w/Host Server)**
Includes the following items
a. SA500n -- Rack PC, 1U, Xeon
b. PKV100 – Packet Scan Software
c. PKV169 – Net Surveyor Lite

ATM509　　**Software Event Data Logger**
Software based Event Data Loggger - Runs on any Windows PC, receives timed/discrete events from different PacketAnalyzers / Discrete Signal Loggers on the PC NIC card, and sends notifications to the MAPS-Administrator

ATM008　　**24-Port Programmable Switch**

ATM008a　　**48-Port Programmable Switch**

SA053　　**Analog Converter with embedded Sensory**
Analog Audio along with Control Signal (I/O) interface box with connections to GL ATM and customer APC. Includes embedded Sensoray 48-channel digital I/O.

VoIP Miscellaneous Tools

PKA001   **600 ohm to Sound Card Transformer/Adapter**
Adapts Sound Card Interface to 600 Ohms.

PKA006   **VoIP Hub for testing and configuration purposes**
Useful for connecting multiple PacketScan™

SA051   **2U 19" Rackmount Kit for PXE104**
One Hardware Kit for Rack mounting One PXE104. 19" Rackmount Kit occupying 2U.

SA052   **Sensoray 48-Channel Digital I/O**
Sensoray 48-Channel Digital I/O Interface with termination board and power supply

PKX002   **Packet Series Configuration, Setup, Testing (per day)**
Exclusive of travel

PKX003   **Software, Hardware Warranty and Support**
Warranty and Comprehensive Support for Hardware and Software = 10% of PO – All Packet Ethernet Products

PKX104   **Interrupted One Year Software Upgrade Extensions**
Warranty and Comprehensive Support for Hardware and Software = 12% of PO – All Packet Ethernet Products

PKX100   **VoIP Training (per day, exclusive of travel)**
VoIP Training (PacketScan™, RTP Toolbox™, PacketCheck™, IPNetSim™, MAPS™ an

PKX101   **Professional Services (per day, exclusive of travel)**
Development or Testing Services (per day)

***** Ethernet/ IP/ VOIP Products Section *****

PC Platforms

PC Platforms

SA005d   **Notebook PC**
Notebook PC – minimum specs i7, 16 GB RAM, 512 GB SSD, Win 10/64 Pro, 3 or 4 USB ports; Additional $ 1K for high end Notebook PC w/ 1TB SSD;

SA005p   **Portable Lunchbox PC**
Portable, Xeon

SA005r   **Rack PC, 2U, Xeon - Standard**
Rack mount PC w/o Monitor

GL Communications Inc.

PC Platforms

SA005s **Rack PC, 2U, Xeon - Super**
Rack mount PC w/o Monitor

SA005z **Rack PC, 1U, Xeon**
Rack mount PC w/o Monitor

SA005m **Rack PC, 1U, Xeon**
Rack mount PC w/o Monitor

SA005n **Rack PC, 1U, Xeon**
19" Rack mount PC w/o Monitor, Keyboard or Mouse, Xeon 16 GB, Dual Processor, 1 TB SSD, with mounting rail and bezel, Dimensions H 1.75" x W 17.24" x L 14",Dell

SA005o **Rack PC, 1U, Core i7**
19" Rack mount PC w/o Monitor, Keyboard or Mouse, Intel Core i7 processor 16 GB RAM, 500 GB SSD, Dual NIC, Windows 11 Pro, mounting rail.

PC Platforms

SA005   **KVM**
Rack Mount KVM console

SA012C   **Shipping Case for Notebook PC (Sa005d)**
Shipping Case

mTOP™ Integrated Test Platforms
Refer to mTOP™ Platforms page for more details.

For more information, please visit https://www.gl.com/test-tools-in-rack-based-platforms.html

SA012   **Lunchbox PC Shipping Case w/ Built-in Cart**
Special PC Hard Shell Shipping Case

SA012c   **Shipping Case for Notebook PC (SA005d)**
Shipping Case for FAA and ATT

SA022   **Extended 1 Yr. Software Upgrades and Hardware Warranty, and Comprehensive Support for Basic and Optional Software**
Warranty and Comprehensive Support for Hardware and Software = 10% of PO – All T1 E1 Products; includes PC

SA022r   **Reinstatement of 1 Yr. Software Upgrades and Hardware Warranty, and Comprehensive Support for Basic and Optional Software**
Warranty Reinstatement and Comprehensive Support for Hardware and Software = 12% of PO – All T1 E1 Products; includes PC

***** End of PC Platforms Section *****

---

mTOP™ Platforms

MT001 **mTOP™ 1U Rack Mount Enclosure w/SBC**
1U 19" Rack Mount Enclosure w/Rails, Multiple Interface TDM/Optical/Packet w/Single Board Computer (SBC) (Specs: 240 GB SSD, 8GB RAM, i3 Equivalent, Win 10/64), USB 3.0 Hub, ATX Power Supply, Can house any combination of three (3) USB based units - PacketExperts, tProbes, Dual UTAs, and LightSpeeds; Optional VGA to mini DP interface cable

MT001E **mTOP with i7**
Same as MT001 but with Intel Core i7

MT002 **mTOP™ 1U Rack Mount Enclosure w/o SBC**
w/o SBC, but for use with MT001 for Daisy Chain or other Rack PCs

MT005 **mTOP Probe**
Portable stand-alone unit, includes i3 Intel NUC (w 8GB RAM, 256 GB HDD, Win 10/64); packaged in a more compact design with support for a single GL board; Can house any one of the USB based units - PacketExperts, tProbes, Dual UTAs, T3/E3 units and LightSpeeds; Optional VGA to mini DP interface cable. Dimensions: 264mm long, 76.6mm high, and 212.6mm wide

MT005E **mTOP Probe with i7**
Same as MT005 but with Intel Core i7

For more information, please visit https://www.gl.com/test-tools-in-rack-based-platforms.html

Following mTOP™ units are available:

mTOP™ VQuad™ Dual UTA HD (3x DUAL UTA HD)
mTOP™ T1 E1, and T3E3 Testers
mTOP™ Multi-Port Ethernet
mTOP™ Ethernet-Optical-TDM Testers
mTOP™ T1 E1 FXO FXS Tester
mTOP™ T1 E1 Datacom Tester
mTOP™ PacketExpert™ 10GX Portable
mTOP™ PacketExpert™ 12-Port 10GX 1U Rackmount

mTOP™ T1 E1 FXO FXS Tester

mTOP™ tProbe™ T1 E1 w/Datacom Tester

mTOP™ 1U Stacked VQuad™ Dual UTA HD (6x DUAL UTA HD)

PacketExpert™ 10GX MTOP™ Pobe

mTOP™ 1U PacketExpert™ 12-Port 10GX

***** End of mTOP™ Platforms *****

Hardware Platforms

2U with T3/E3 and T1/E1 Test Tools

2U with 24-Port PacketExpert™

2U with T3 E3 PacketExpert™ LightSpeed1000™

GL Distributors and Representative Offices

Europe

Germany, Poland, Austria & Hungary

AVOTEL Handels GmbH

Auhofstr. 164/1/11
1130 Vienna, Austria

Contact: Edmund Dziurdz
Phone: +43 676 7555575
Email: edmund.dziurdz@avotel.net

UK & Ireland

Laser 2000 (UK) Ltd.

Unit 9, Avro Court
Ermine Business Park, Huntingdon,
Cambridgeshire, PE29 6XS

Contact: Yeberlin De-Lira
Phone: +44 1933 461666
Email: sales@laser2000.co.uk

Czech Republic

TransTech Electronic s.r.o.

Hnevkovska 58,
148 00 Praha 4
Czech Republic

Contact: Pavel Vavrousek
Phone: +420261221039
Fax: +420 261221040
Email: vavrousek@transtech.cz

Switzerland

YOTAVIS AG

Aarbergstrasse 46
CH-2503 Biel/Bienne
Switzerland

Contact: Stefan Junker
Phone: +41 31 312 48 48
Fax: +41 31 312 87 87
Email: info@yotavis.com

Netherlands

C.N. Rood B.V.

Blauw-roodlaan 280
2718 SK Zoetermeer

Website : www.cnrood.com
E-mail: info@cnrood.com

Belgium & Luxembourg

C.N. Rood N.V./S.A.

Z.1. Researchpark 40
B-1731 Zellik
Belgium

Website : www.cnrood.com
Email: info@cnrood.com

Sweden & Denmark

CN ROOD Nordics AB

Website : www.cnrood.com
Email: info@cnrood.com

Norway

CN ROOD Nordics AB

Website : www.cnrood.com
Email: info@cnrood.com

Finland

CN ROOD Nordics AB

Website : www.cnrood.com
Email: info@cnrood.com

France

Elexo - Atos

Avenue Jean Jaures / Rue du gros caillou
78340 Les Clayes sous Bois, France

Contact: Bruno Regaud
Phone: +331 4122 1000
Mobile: +331 4122 1001
Email: info@elexo.fr

Romania

TELEDATANET

Experience Innovation
27, Baciului Road
Cluj-Napoca, RO-400604
ROMANIA

Contact: Dinu Dragomir
Phone: +40-264-447999
Fax: +40-264-447988
Email: dinu.dragomir@teledatanet.com

Turkey

Partner Electronic

1879 Sok.
No:49 Karsiyaka – Izmir
Turkey

Contact: Yavuz Ince
Phone: +905074953679
Email: sales@partnerelectronic.com

Greece

ADAPTIT

4, Thoukididou str.,
14565 Agios Stefanos, Athens
Greece

Contact: Harris Avgoustidis
Phone: +30 210 5131640
Fax: +30 210 5124820
Email: havg@adaptit.gr

Italy
arimas srl

Via Tiburtina Valeria Km 68,200
67061, Carsoli (AQ)
Italy

Contact: Maurizio La Rocca
Phone 1: +39 0863 1865635
Phone 2: +39 349 4706493
Email: info@arimas.com

Asia

India

Aparna Ecommerce Private Limited

II Floor, # 642, 8th B Main,
3rd Stage, 2nd Block,
Basaveshwar Nagar,
Bangalore - 560079
Karnataka, India

Contact: Shriraj Kulkarni
Phone: +91 94490 56644
Email: shriraj@aparna-ecom.com

Contact: Aditya Rao
Phone: +91 80501 07257
Email: aditya@aparna-ecom.com

Israel

RDT Equipment & Systems

22, Efal street
Petach-Tikva 4951122
Israel

Contact: Erez Gritzman
Phone: +972-3-645-0780
Fax : +972-3-645-0760
Email: erezg@rdt.co.il

Malaysia

Aviindos (M) Sdn Bhd.

No.3-1-1, Jalan 4/101C,
Cheras Business Center,
56100, Kuala Lumpur,
Malaysia

Contact: Naveendran Murthy
Tel: +603-9133 3513 / +6012-9032050
Fax: +603-9133 3523
E-mail: naveen@aviindos.com

Taiwan

Systemcom Co., Ltd.

4F No.72 Sec. 2 Nanjing East Road,
Taipei 104, Taiwan, R.O.C.

Contact: Dennis Ting
Phone: +886-2-2564-3456 Ext. 506
Fax: +886-2-2571-5077
Email: dennis.ting@systemcom.com.tw

Japan

ComWorth

2-35-7, Nishimagome
Ota-ku, Tokyo, 143-0026
Japan

Contact: Naoya Inoue
Phone: +81 (0)3 3777 0888
Email: inoue@comworth.co.jp

South Korea

Daekyoung Techsys

#312, Jungwon Bldg.,
613-2, Mok-dong,
Yangcheon-gu,
Seoul, Korea

Contact: Kichul Park
Phone: 02-525-2181
Fax: 02-525-2182
Mobile: +82 1040802305
E-mail: kichul.park@dktechsys.com

GL Distributors and Representative Offices

Thailand

All Telecom Co.,Ltd

46 Soi Phetkasem 24,
Pakklong-Phasricharoen,
Phasricharoen,
Bangkok 10160

Contact: Siramet Rungsiyathaninon
Phone: +66 2 868-5615
Fax: +66 2 457-2371
E-mail: siramet.r@alltelecom.net

Vietnam

Tien Hung Investment and Trade Company Limited

2nd Floor, No. 72, Lane 521,
Co Nhue Str., Ha Noi City,
Viet Nam

Contact: Mr Đinh Văn Tiến (David)
Phone: +84.4.62598027
E-mail: tihut@tihut.vn

Chuongmy., JSC

No.154, Quang Trung St,
Ha Dong, Hanoi,
Vietnam

Contact: Trinh Viet Huan
Phone: +84-4 33522319
Fax: +84-4 33522309
Mobile: +84(0)903257994
E-mail: sozo@chuongmy.com

Australia

Australia & New Zealand

Maser Technology Group

Unit 9/ 15b Rodborough Rd
Frenchs Forest, NSW
Australia

Contact: Kevin Redmond
Phone: +612 9452 6062
Mobile: +61 (0)410 535 845
Email: kevin.redmond@maser.com.au

South and Central America

Rentametric

Contact: Alfredo Martin
Tel: +1-305-767-4000
E-mail: amartin@rentametric.com

Africa

Nigeria

Molcom Multi-Concepts Limited

21 IBM Haruna Crescent
Utako, FCT, Abuja
Nigeria

Phone: +234 806 533 3900
Email: sales@molcomconcepts.com

GL Offices

GL Offices

GL Distributors & Representative Offices

Headquarters

GL Communications Inc.

818 West Diamond Avenue - Third Floor
Gaithersburg, MD 20878

Contact: Shelley Sharma
Phone: +1 (301) 670-4784 Ext. 114
Fax: +1 (301) 670-9187
Email: info@gl.com

GL Branch Offices

GL India - Bangalore

GL Communications India Pvt. Ltd.

#1, "Uma Admirality",
Ground Floor, Bannerghatta Road,
Bangalore - 560029
India

Contact: **Sanjeev Kulkarni**
Phone: +91-80-40488400 Ext. 404
Fax: 91-80-40488401
Email: glindia@gl.com

GL China - Shanghai

5H, Hua Min Empire Plaza,
728 West Yan An Road,
Shanghai 200050
China

Contact: **Jianxiong Ding**
Mobile: +86 13816090264
Phone: +86 2162370268, +86 2162703066
Fax: +86 2162370268 Ext 103
Email: glchina@gl.com