

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



Voice, Fax, Data, & Video Quality

IP, TDM, PSTN, 3G 4G, 2G, Bluetooth
PESQ, POLQA, PAMS
Data Testing over Wired and Wireless



Network-wide Monitoring Solutions

Signaling & Traffic
VoIP, TDM, Wireless



High Speed Telecom Lines

OC-3, OC-12, STM-1, STM-4, T3, E3
Channelized & Unchannelized

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TDM Hardware & Software Products

OctalXpress and QuadXpress T1E1 PCIe Cards

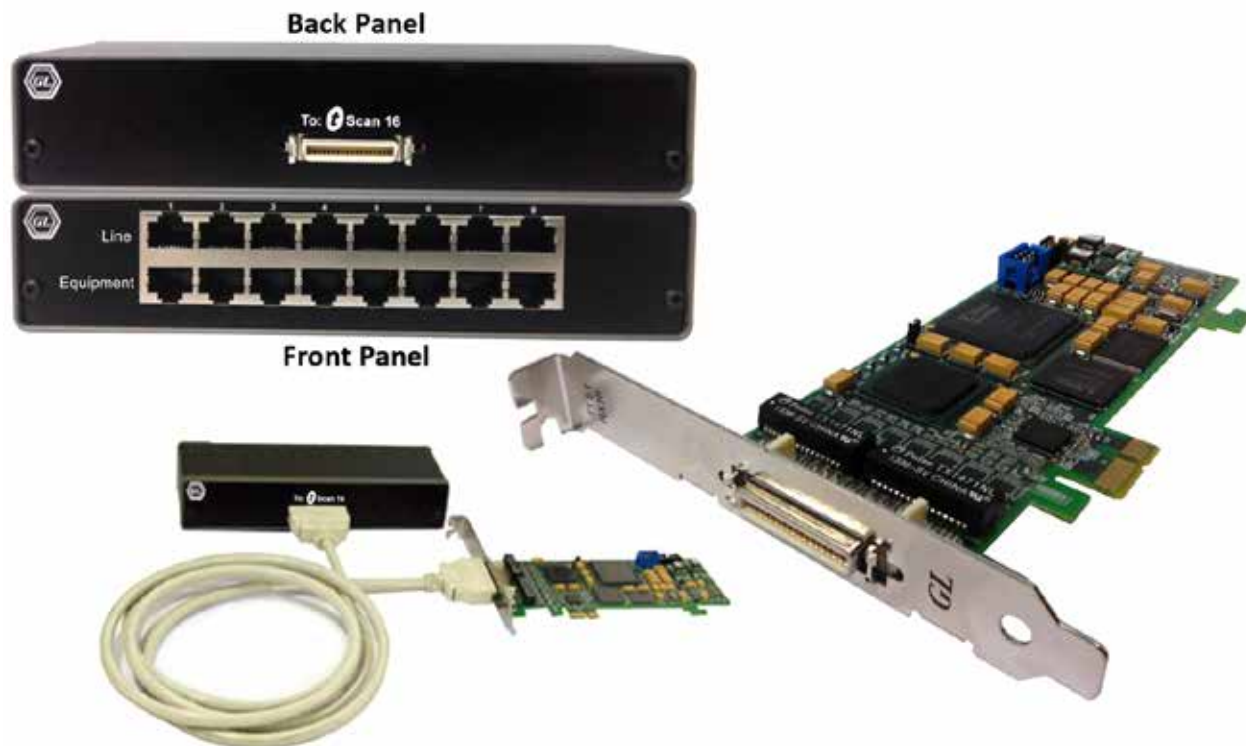
FTE001	QuadXpress T1 E1 (Main Board) Quad Port T1 E1 Main Board w/PCIe (x1) Interface - requires ETA00x or EEA00x licenses
ETE001	QuadXpress T1 E1 (Daughter Card) Quad Port T1 E1 Daughter Board - Requires FTE001 Main Board and ETA00x or EEA00x
ETA002	Two Port License for T1
ETA003	Timeslot Delay Loopback 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

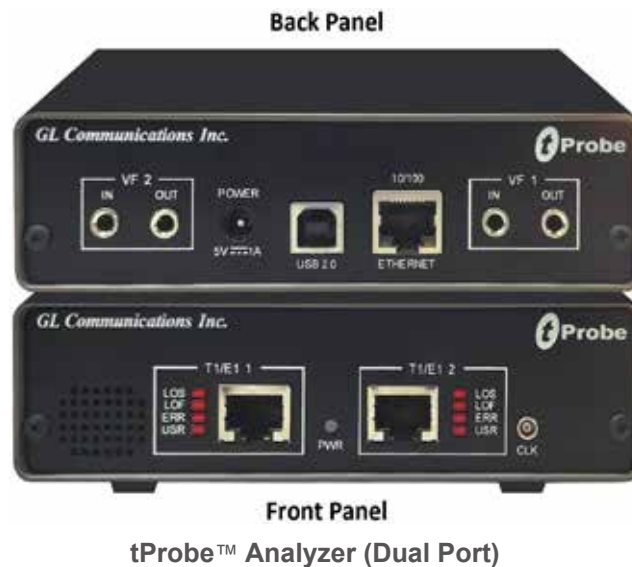
For more information, please visit <https://www.gl.com/dual-t1-e1-pcie-boards.html>



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)



- 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

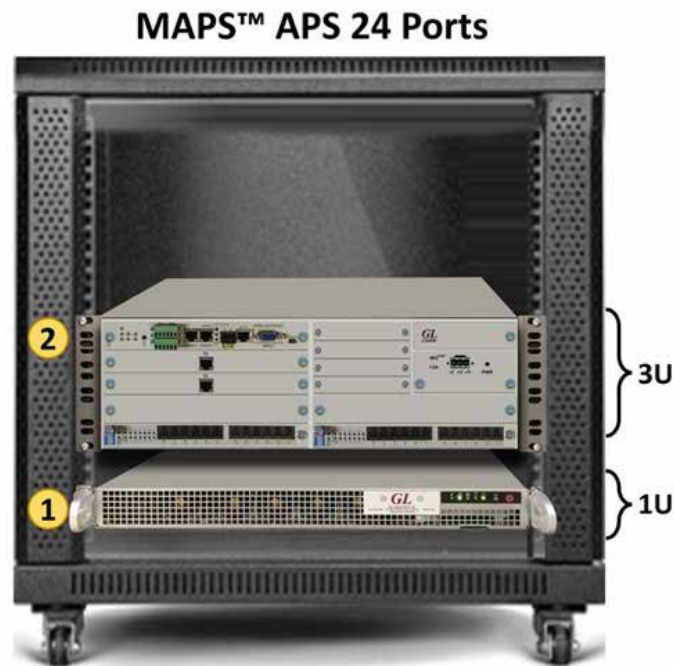


Analog Phone Simulator (APS)

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

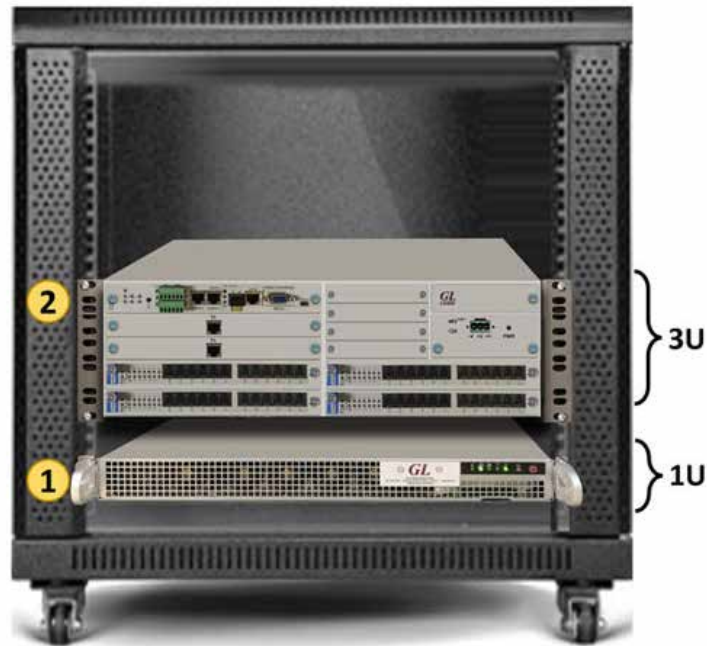


- ① MAPS™ APS Server (Optional VQT Analysis)
- ② APSCB-24 x 1

24-Port Analog Phone Simulator

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

MAPS™ APS 48 Ports

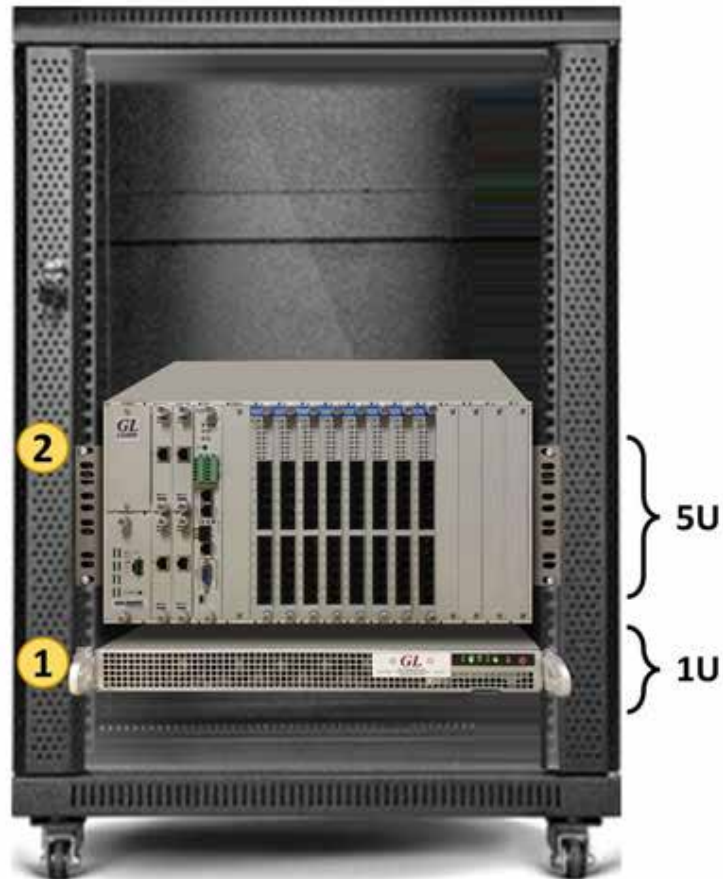


- ① MAPS™ APS Server (Optional VQT Analysis)
- ② APSCB-48 x 1

48-Port Analog Phone Simulator

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

MAPS™ APS 96 Ports

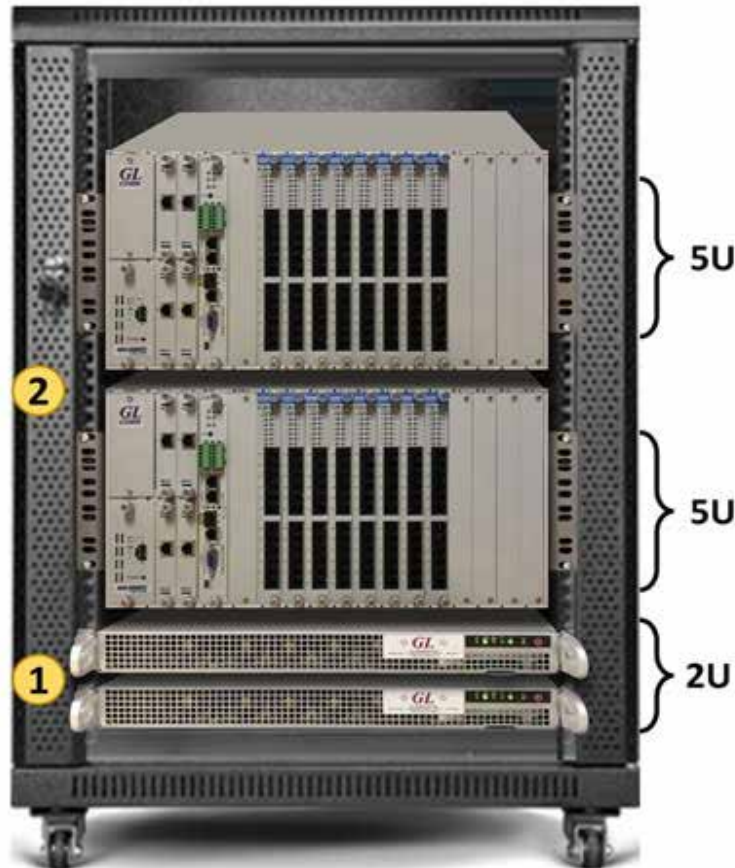


- ① MAPS™ APS Server (Optional VQT Analysis)
- ② APSCB-96 x 1

96-Port Analog Phone Simulator

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

MAPS™ APS 192 Ports



- ① MAPS™ APS Server (Optional VQT Analysis)
- ② APSCB-96 x 2

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 multiframe in real-time. The data is refreshed for about every second.

Real Time Bitmap Monitoring

Permits a graphical view of complete multiframe 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/M 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 multiframe 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

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

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

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.

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 XX092	Lucent Protocol Analyzers 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 OLV100	Call Capture Option for ISDN Protocol 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

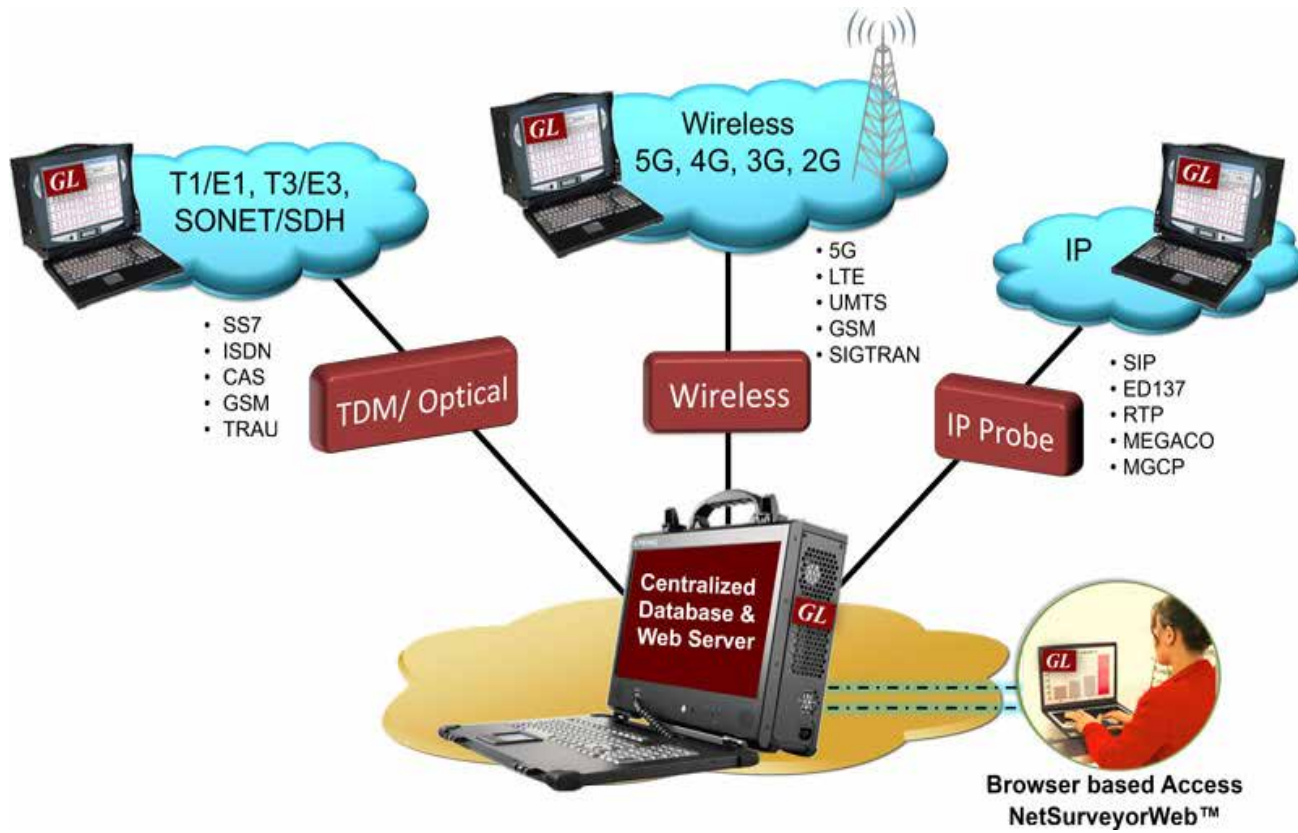
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OLV135	Offline PPP and ML-PPP Protocol Analyzer Decodes and analyzes pre-captured ML-PPP and PPP files.
OLV136	Offline PPP and ML-PPP Packet Analysis Offline Packet Voice, Video, and Fax Analysis - includes SIGTRAN, PacketScan™ functions - but not 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

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



Back Panel

T1 Multiport Repeater RJ45

MPE00

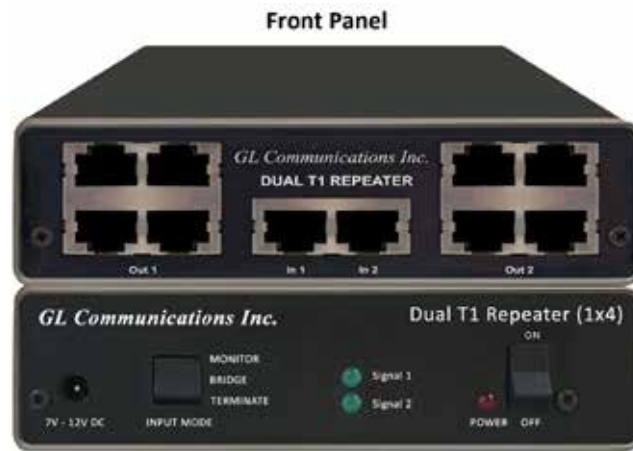
E1 Multiport Repeater
For 1:12 E1 Repetition



Back Panel

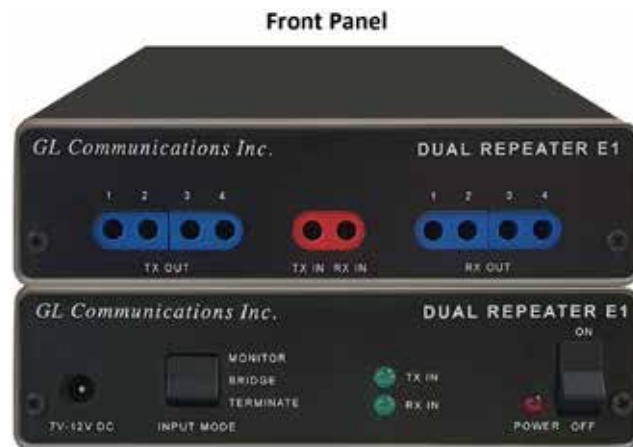
E1 Multiport Repeater Bantom

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



Back Panel
Dual T1 Multiport Repeater

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



Back Panel
Dual E1 Multiport Repeater

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

TDM Hardware and Software Products

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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



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)**

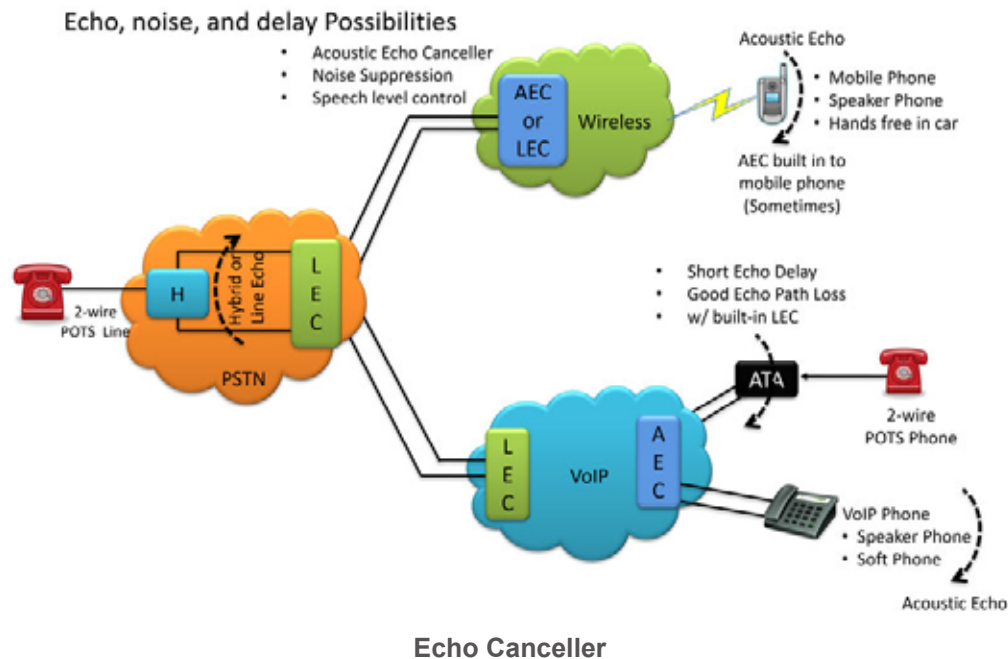
FaxScan™ is GL's command-line Fax decoder/demodulator application used to analyze the recorded voice band traffic (PCM stream & PCAP files) for Fax traffic. It provides analysis of the T.38 packets, T.30 frames, general call-flow indicators and decoded fax image in TIFF-F format. FaxScan™ is also available 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 Cancellor Test Tools

PKB105	G.168 Echo Cancellor Test Compliance Suite Supports manual G.168 Echo Cancellor Test Compliance Procedures and Codec Files (w/dongle to enable GLCView); includes PKB070.
PKB067	Automated Echo Cancellor 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 Cancellor 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 Cancellor 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 Cancellor Testing per CCITT G.168; w/ GLC View; includes xx020, xx062, xx063, xx066, and PKB070.
XX066	Digital Echo Cancellor This application is a multi-channel digital echo canceller; Measure and displays impulse response, ERL, delay, etc.
XX067	Automated Echo Cancellor Testing without VQT Performs automated Echo Cancellor 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 Cancellor 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 Cancellor Testing for TDM-VoIP For more information, please visit Voice Quality Testing Products .

Echo Cancellor Test Tools

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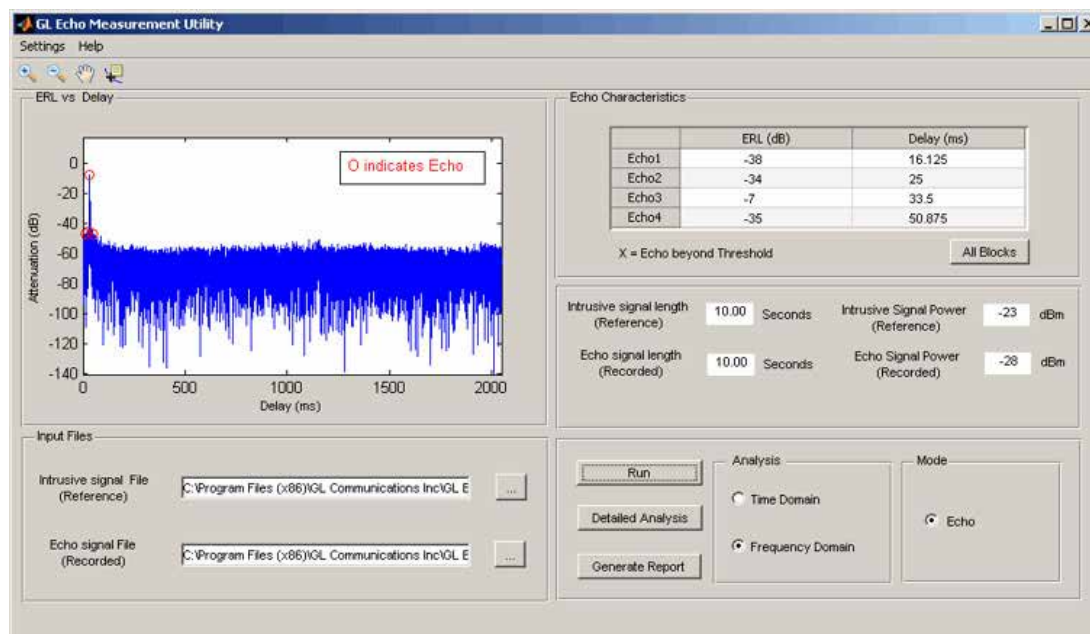
PKB081 Automated Acoustic Echo Canceller Compliance Testing (Partial Tests)

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 *****

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>

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 EE3020	T3 Record Playback Software (GUI) 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 EE3190	T3 HDLC Tx/Rx Test + Analyzer (GUI) E3 HDLC Tx/Rx Test + Analyzer (GUI) Send, Receive, and Analyze HDLC over T3 or E3
TT3135 EE3135	T3 PPP Analyzer (GUI) E3 PPP Analyzer (GUI) Analysis and Decode ML-PPP and PPP protocols and other higher layer IP protocols over T3 or E3
TT3130 EE3130	T3 Frame Relay Analyzer (GUI) 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

T3 E3 Analysis Emulation

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TTT001 TTTxxx	Soft T1 Analyzer Application-Required and Included 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 EEExxx	Soft E1 Analyzer Application-Required and Included Channelized Options for E1 Direct E1 Analysis for up to 21 E1s from T3 Channelized Options for E1
EEE001 EEExxx	Soft E1 Analyzer Application-Required and Included 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 EE3610	T3 Client Server Tx/Rx File E3 Client Server Tx/Rx File Tx / Rx Files on Unframed or Unchannelized T3 or E3; requires xx600
TT3634 EE3634	T3 Client Server High Throughput HDLC Tx/Rx Test E3 Client Server High Throughput HDLC Tx/Rx Test HDLC Simulation over T3 or E3 with Impairments ; requires xx600
TT3635 EE3635	T3 Client Server High Throughput PPP Tx/Rx Test 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>

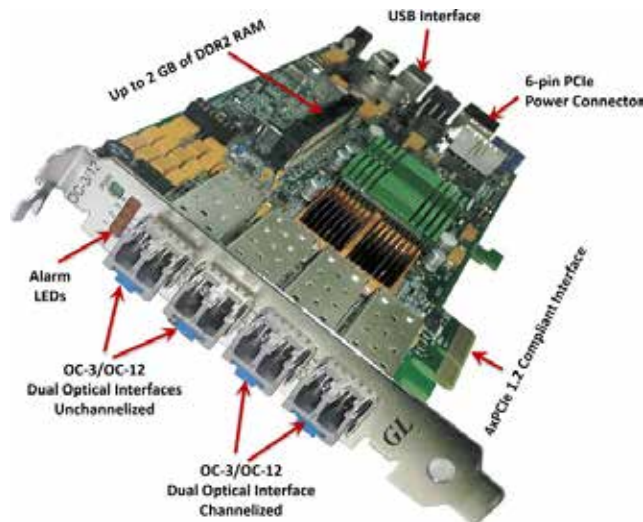
***** End of T3E3 Analysis Emulation Section *****

OC-3/STM-1 OC-12/STM-4 Analysis and Emulation

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

LTS100 **Lightspeed1000™ - Dual OC3/12 STM1/4 PCIe Card**



Dual OC-3/12 & STM-1/4 PCI Express Card

LTS105 **Lightspeed1000™ - 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>

Front Panel



Back Panel

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 luCs 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 -luCs
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 luCS over ATM luCS 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

OC-3/STM-1 OC-12/STM-4 Analysis and Emulation

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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 luCs 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 -luCs
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 luCS over ATM luCS Interface Emulation over ATM, simulates RNC and MSC, requires LTS214
LTS307	Delay Emulation 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
SEE001	Basic Applications 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
SEU116	Optional Application Licenses 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 *****

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 WebViewer™**
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 database.

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

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- 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

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- 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>

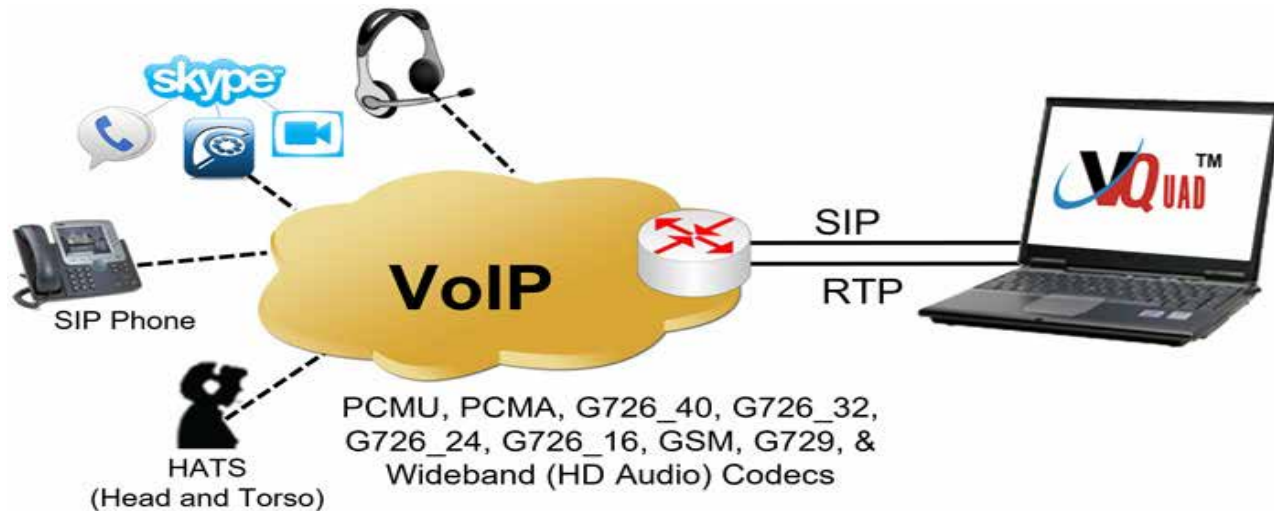
Echo Measurement Utility

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 (Requires annual license renewal to remain functional)**
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



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.

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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.
VQT008S	Extended (Annual) VAT (VQT008) Software Upgrades & 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 Software enhancements and support for subsequent one-year increments
VQT041S	Extended (Annual) VQT041 WebViewer (with Oracle Database) Software Upgrades & Comprehensive Support Software enhancements and support for subsequent one-year increments
VQT022S	Extended (Annual) VQT022 VQuad™ Fax Software Upgrades & Comprehensive Support Software enhancements and comprehensive support for one-year
VQT013S	Extended (Annual) VQT013 SIP (VoIP) Call Control Upgrades & Comprehensive Support Software enhancements and comprehensive support for one-year
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

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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.
VQT291S	Extended (Annual) Hardware and Software Warranty for vMobile (VQT291) Hardware and Software Warranty for VQT291, Includes vMobile and related 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

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 Testers

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>



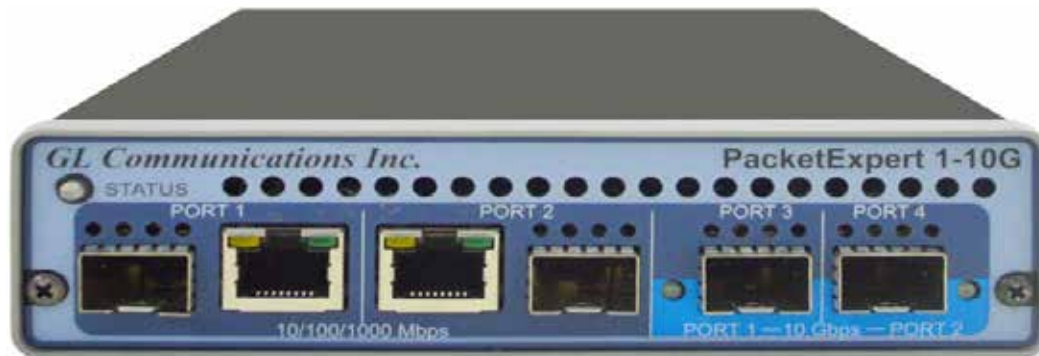
PacketExpert™ 1G

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 are portable and rack enclosures, mTOP probe/rack; Probe for a single GL board i3/i7 Intel NUC; Rack for up to three/six boards (or, total 12 / 24 ports).



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 / and SM 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


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



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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



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



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



PXX101	Basic Software (Required for PXX100) All Port BERT, RFC-2544, Y.1564, MultiStream, Smart Loopback, and OWD applications over two ports of 1G, 10G, and 25G; Required for PXX100 or PXX107.
PXX103	Additional 2-port card with Basic Software Up to 4, 2-Port Cards (including the basic 2-Port Card) total per system for 8-Port testing; required for PXX107.
PXX105	40, 50, 100G Optional Software Optional software to support additional rates of 40, 50, and 100 G per system.
PXX106	PacketExpert™ 100 G – One card / 2 Port Platform with MM Kit Lunchbox / 1U Rack PC, 16 GB RAM, 500 GB SSD, Dual Port SmartNIC with QSFP28 Cages, SFPs, Cables, & Adapters. Includes standard MM SFPs for all rates, with Pelican case for Lunchbox; includes PXX100, PXX101, PXX105, and PXX109; Electrical / SM SFPs and Loopback Plugs extra; Includes 3-year hardware/software support warranty.
PXX107	PacketExpert™ 100 G - Two Card / 4 Port Platform with MM Kit Lunchbox / 2U rack PC, 16 GB RAM, 500 GB SSD, Two SmartNIC with 2 ports each of QSFP28 Cages, SFPs, Cables, & Adapters. Includes standard MM SFPs for all rates, with Pelican case for Lunchbox; includes PXX100, PXX101, PXX105, and PXX109; Electrical / SM SFPs and Loopback Plugs extra; Includes 3-year hardware/software support warranty.
PXX108	PacketExpert™ 100 G – One card / 2 Port Platform with SM Kit Lunchbox / 1U Rack PC, 16 GB RAM, 500 GB SSD, Dual Port SmartNIC with QSFP28 Cages, SFPs, Cables, & Adapters. Includes standard SM SFPs for all rates, with Pelican case for Lunchbox; includes PXX100, PXX101, PXX105, and PXX109; Electrical SFPs and Loopback Plugs extra; Includes 3-year hardware/software support warranty.
PXX109	Optional Software for Test Automation using Scripting with client-server APIs Testing Automation, w/ Automation with Python Scripting using Python Client APIs - Automation using REST APIs (using any client that supports REST APIs with JSON)
PXX110	PacketExpert™ 100 G - Two Card / 4 Port Platform with SM Kit TLunchbox / 2U rack PC, 16 GB RAM, 500 GB SSD, Two SmartNIC with 2 ports of QSFP28 Cages, SFPs, Cables, & Adapters. Includes standard SM SFPs for all rates, with Pelican case for Lunchbox; includes PXX100, PXX101, PXX105, and PXX109; Electrical SFPs and Loopback Plugs extra; Includes 3-year hardware/software support warranty. Includes Basic Software, additional 2 port Card, license for 2nd Card, All Port BERT, BERT/Loopback, Smart Loopback, RFC2544, ExpertSAM (Y.1564), MutiStream, Python, Rates 1, 10, 25, 40, 50, 100G, FEC for Fire Code (FC), RS(528), RS(544) fully supported per IEEE Standard
PXX10X	PacketExpert™ 100 G – 4 Card Platform / 8 Port Platform
SA012	Pelican Case Standard, necessary for Lunchbox platform only; for housing all accessories cables, connectors, adapters, and manuals
SA020a	Adapter / Converter MM+SM, MTP to LC, 100G to 25G, 10G, 1G, Converter Module Standard, necessary for converting multi-fiber QSFP28 connector to dual fiber LC connector for 1, 10, 25G rates
SA020b	SM LC-to-LC FO Cable, optional Optional, for SM package, if requested by customer
SA020c	MM LC-to-LC FO Cable Standard, for MM package
SA020d	MM MTP to MTP Cable (2), 5m Standard, for MM package, the multi-fiber connector on both ends with minimum of 8 fibers

SA020e	SM MTP to MTP Cable (2), 5m Optional, for SM package, if requested by customer, multi-fiber connector on both ends with a minimum of 8 fibers
SA020f	1G Electrical SFP, RJ-45, optional Optional SFP, if requested by the customer; Requires SA020i;
SA020g	10G Electrical SFP, RJ-45, optional Optional SFP, if requested by the customer; Requires SA020i;
SA020h	1/10G Multirate Electrical SFP, RJ-45, optional Optional SFP, if requested by the customer; Requires SA020i;
SA020i	RJ-45 Cable, 6 ft, CAT 6, optional Optional RJ45 Cable, if requested by the customer
SA020j	1G SM SFP, requires an adapter, optional Optional SFP, for SM package, if requested by the customer
SA020k	10G SM SFP, requires an adapter, optional Optional SFP, for SM package, if requested by the customer
SA020l	1/10G SM Multirate SFP, requires an adapter, optional Optional SFP, for SM package, if requested by the customer
SA020m	25G SM SFP, requires an adapter, optional Optional SFP, for SM package, if requested by the customer
SA020n	40G SM SFP, optional Optional SFP, for SM package, if requested by the customer
SA020o	50G SM SFP, standard, MM (Not Available) Standard SFP, for SM package
SA020p	100G SM SFP, optional Optional SFP, for SM package, if requested by the customer
SA020q	1G MM SFP, requires an adapter Standard SFP, for MM package
SA020r	10G MM SFP, requires an adapter Standard SFP, for MM package
SA020s	1/10G MM Multirate SFP, requires an adapter, optional Optional SFP, for MM if requested by the customer
SA020t	25G MM SFP, requires an adapter Standard SFP, for MM package
SA020u	40G MM SFP Standard SFP, for MM package
SA020v	50G MM SFP (Not/Available), SM provided instead Standard SFP, for MM package

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SA020w	100G MM SFP Standard, SFP, for MM package
SA020x	LC to LC Loopback Plug (MM) Standard Loopback Plug, for MM package
SA020y	MTP to MTP Multi-Fiber Loopback Plug (MM) Standard Loopback Plug, for MM package
SA020z	MTP to MTP Multi-Fiber Loopback Plug (SM optional) Optional Loopback Plug, for SM if requested by the customer
SA020aa	QSFP28-100G, 5m DAC Cable Optional, DAC Cable for 100G 5m in length
SA020ab	QSFP-40G, 5m DAC Cable Optional, DAC Cable for 40G 5m in length
SA020ac	SFP28 25G, 5m DAC Cable Optional, DAC Cable for 25G 5m in length
SA020ad	SFP+ 10G, 5m DAC Cable Optional, DAC Cable for 10G 5m in length
SA020ae	QSFP 100G, 5m AOC Cable (MM) Optional, AOC Cable for 100G 5m in length
SA020af	QSFP+ 40G, 5m AOC Cable (MM) Optional, AOC Cable for 40G 5m in length
SA020ag	SFP28 25G, 5m AOC Cable (MM) Optional, AOC Cable for 25G 5m in length
SA020ah	SFP 10G, 5m AOC Cable (MM) Optional, AOC Cable for 10G 5m in length

SA020mm Multi-Mode Accessory Kit (for 2-port 100G tester) (Standard)

Includes the following accessories

- SA012 (1) (Pelican Case, included with Lunchbox platform only)
- SA020a (2) (Adapter / Converter MM+SM, MTP to LC, 100G to 25G, 10G, 1G, Converter Module)
- SA020c (2) (MM LC-to-LC FO Cable)
- SA020d (2) (MM MTP to MTP Cable (2), 5m)
- SA020q (2) (1G MM SFP, requires an adapter)
- SA020r (2) (10G MM SFP, requires an adapter)
- SA020t (2) (25G MM SFP, requires an adapter)
- SA020u (2) (40G MM SFP)
- SA020v (2) (50G MM SFP (Not/Available), SM provided instead)
- SA020b (2) (to be used with SA020v) (SM LC-to-LC FO Cable)
- SA020w (2) (100G MM SFP)
- SA020x (2) (LC to LC Loopback Plug (MM))
- SA020y (2) (MTP to MTP Multi-Fiber Loopback Plug (MM))

SA020sm Single-Mode Accessory Kit (for 2-port 100G tester) (Optional)

Includes the following accessories

- SA012 (1) (Pelican Case, included with Lunchbox platform only)
- SA020a (2) (Adapter / Converter MM+SM, MTP to LC, 100G to 25G, 10G, 1G, Converter Module)
- SA020b (2) (SM LC-to-LC FO Cable)
- SA020e (2) (SM MTP to MTP Cable (2), 5m)
- SA020j (2) (1G SM SFP, requires an adapter)
- SA020k (2) (10G SM SFP, requires an adapter)
- SA020l (2) (1/10G SM Multirate SFP, requires an adapter)
- SA020m (2) (25G SM SFP, requires an adapter)
- SA020n (2) (40G SM SFP)
- SA020o (2) (50G SM SFP)
- SA020p (2) (100G SM SFP)
- SA020z (2) (MTP to MTP Multi-Fiber Loopback Plug (SM))

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));

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
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

RTP Traffic Options (Requires MAPS Signaling Software)

PKS102 **RTP Soft Core (additional)**

2nd and Additional Instances (w/ dongle)

PKS103 **RTP luUP Softcore**

RTP Voice Traffic Generation over luUP ; requires PKS102 and PCD103 – Used in UMTS Network at luCS 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 PKS211	20 Fax Port Licences 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 Cancellor Test Compliance Suite Supports manual G.168 Echo Cancellor 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

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.

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
PKS175	MAPS™ – M3UA Conformance Test Suite M3UA Conformance test suite based on ETSI TS 102 381.In Compliance with RFC 4666;
PKS176	MAPS™ - M2UA Conformance Test Suite M2UA Conformance test suite based on ETSI TS 102 380. In Compliance with RFC 3331
PKS177	MAPS™ - M2PA Conformance Test Suite M2PA Conformance test suites based on, ETSI TS 101 591, and draft-bidulock-sigtran-m2pa-test-08. In Compliance with RFC 4165
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™ luPC Interface Emulator Emulates SRNC & SMLC over luPC 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)
PKS1390	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
PKS1391	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
PKS1392	MAPS™ Diameter Gy Interface Emulator Emulates PDN GW (Charging Trigger Function) and Online charging System (OCS) to support real-time content-based charging of data services; requires PKS139 base license
PKS1393	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
PKS1394	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
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 - luCs and luh Interface Emulation luCs and luh Interface Emulation, between RNC and MSC or between HNB-GW and HNB; For CS (Circuit Switch) traffic options refer " RTP Traffic Options " section; For PS (Packet Switch) traffic options refer " GTP Traffic Options " section
PKS164	MAPS™ UMTS - lups Interface Emulation MAPS UMTS – luPs 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

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 Replay Emulates 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
PKV400	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
PKV410	IP Analytics (Optional with FastRecorder™ and PacketExtractor™) Gain extensive network intelligence with detailed information on endpoints and conversations for IP, UDP, TCP, and SCTP protocols; Requires PKV123
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)

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,
 - recommends either PKV180/PKV181
 - recommends 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
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 (luCS and luPS) CDR option for Network Surveillance Base Software Requires UMTS luCS, UMTS luPS 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 (includes 4 Ethernet ports)
b. PKS116 - MAPS Administrator for ATM Test Beds
- ATM501a MAPS Administrator with VQT (POLQA)**
Includes the following items
a. SA500n - Rack PC, 1U, Xeon (includes 4 Ethernet ports)
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 (includes 4 Ethernet ports)
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 (includes 4 Ethernet ports)
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 (includes 4 Ethernet ports)
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 (includes 4 Ethernet ports)
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 (includes 4 Ethernet ports)
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. PXN105 - Wirespeed Record / Playback – 1G and 2.5G / 10G
- d. PXN107 - PacketBroker NextGen
- e. 3 x VQT245 - 4-Port TTL Option for Dual UTA
- f. CXN100 – CLI Server
- g. 12 x SA007q – SMA / BNC Cables
- h. SA066 – GPS Receiver with precision time stamping
- i. 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. PXN105 - Wirespeed Record / Playback – 1G and 2.5G / 10G
- d. PXN107 - PacketBroker NextGen
- e. 3 x VQT245 - 4-Port TTL Option for Dual UTA
- f. CXN100 – CLI Server
- g. 12 x SA007q – SMA / BNC Cables
- h. SA066 – GPS Receiver with precision time stamping
- i. 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. PXN105 - Wirespeed Record / Playback – 1G and 2.5G / 10G
- d. PXN107 - PacketBroker
- e. 3 x VQT245 - 4-Port TTL Option for Dual UTA
- f. CXN100 – CLI Server
- g. 12 x SA007q – SMA / BNC Cables
- h. SA052 - 2 x Sensoray 48-Channel Digital I/O interface with termination board and power supply
- i. SA066 – GPS Receiver with precision time stamping
- j. 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

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

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



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.

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™ Probe



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™

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