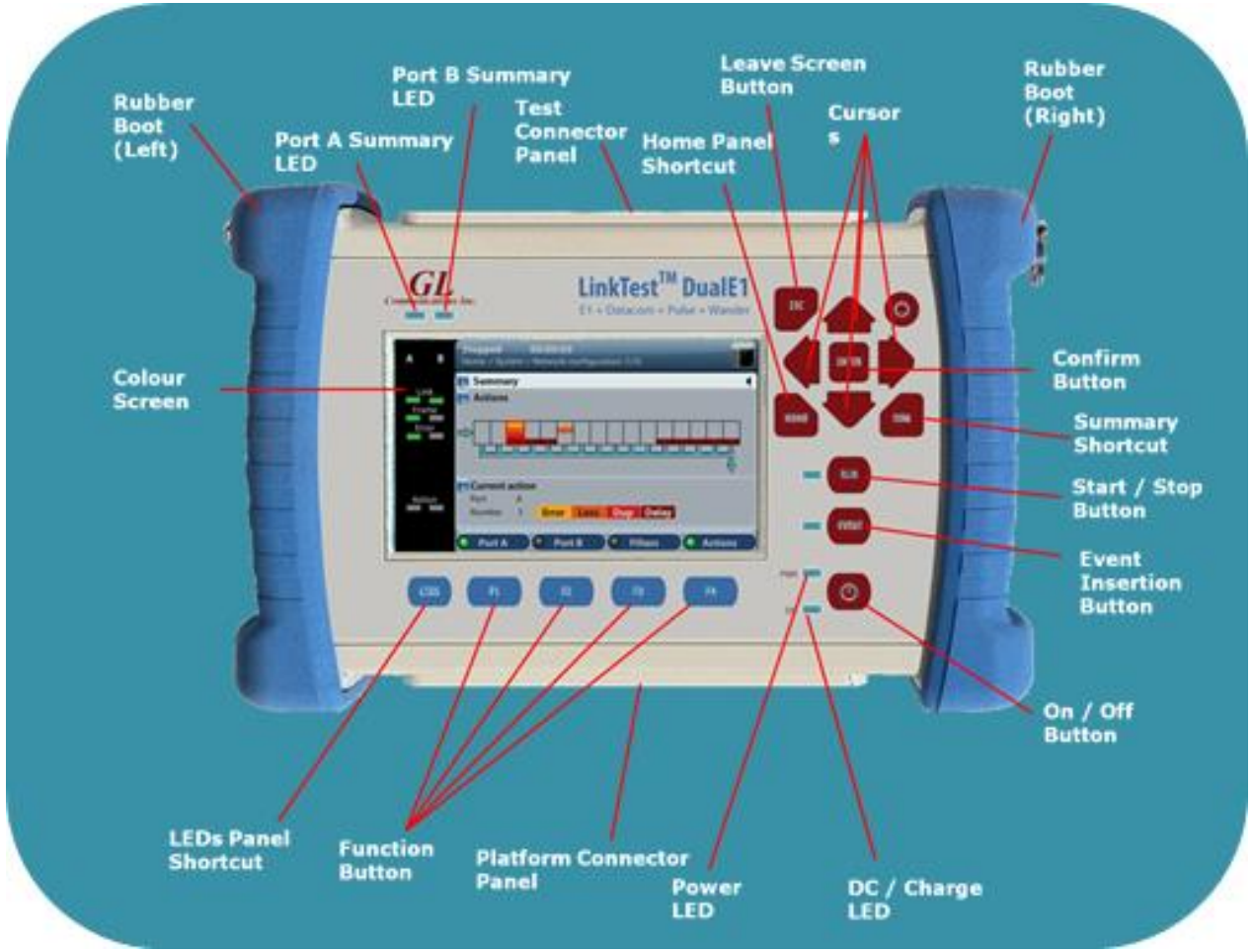
LinkTest™ Dual E1
(E1, Datacom, Jitter, Wander Testing)

GL Communications Inc.
818 West Diamond Avenue - Third Floor, Gaithersburg, MD 20878
Phone: (301) 670-4784 Fax: (301) 670-9187 Email: info@gl.com
Website: https://www.gl.com

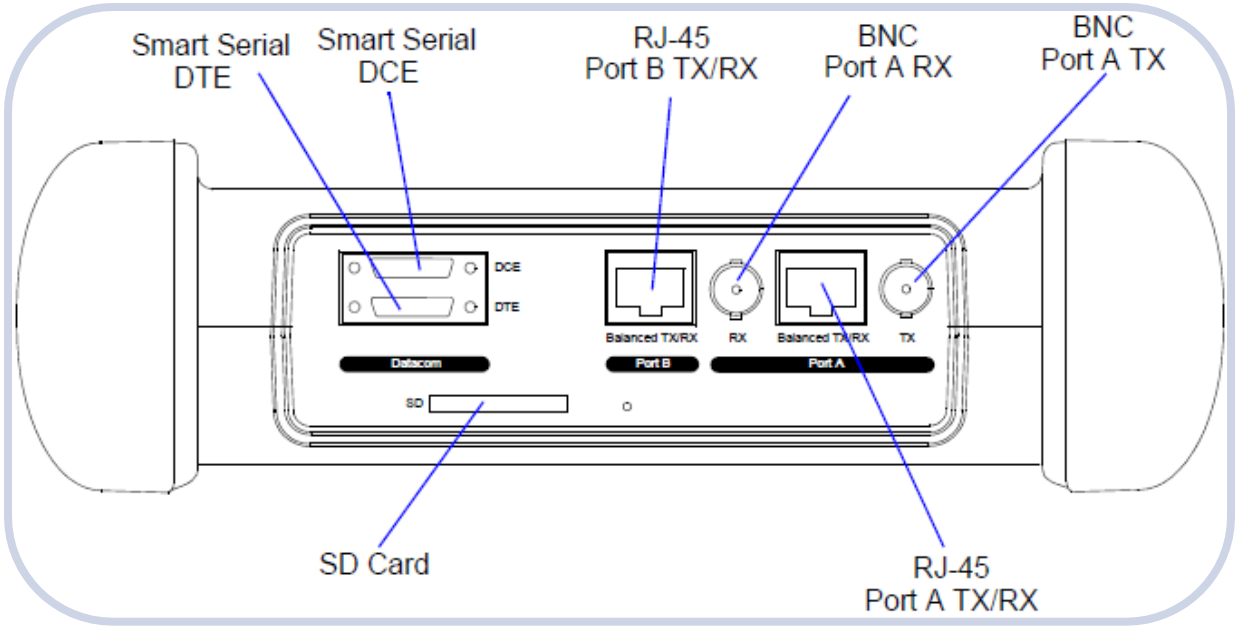
LinkTest™ Dual E1

- Handheld (1kg), Dual-Port tester
- Longest Battery Life (16h. with 2xbatteries)
- Dimensions: 223 mm x 144 mm x 65 mm
- Generation and analysis of E1 and data communications
- Large range of software options for E1 services and sub rate multiplexing system

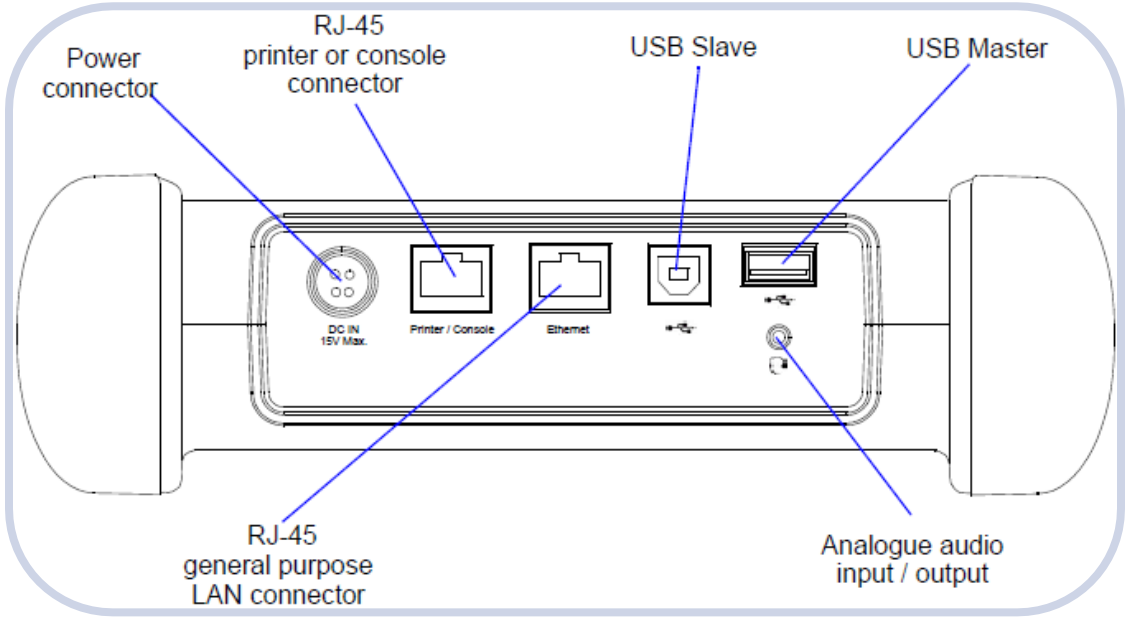


Hardware Specifications

- Port A: Unbalanced (BNC) 75 Ω and balanced (RJ-45) 120 Ω
- Port B: Balanced (RJ-45) 120 Ω
- External signal: Analogue (Port A only), 64 kb/s co-directional (Port A only)
- Universal Datacom interface for the DTE and DCE.
- Bidirectional testing (monitor, endpoint, through) by simultaneous operation of Port A and Port B
- Slot for SD Cards for external storage

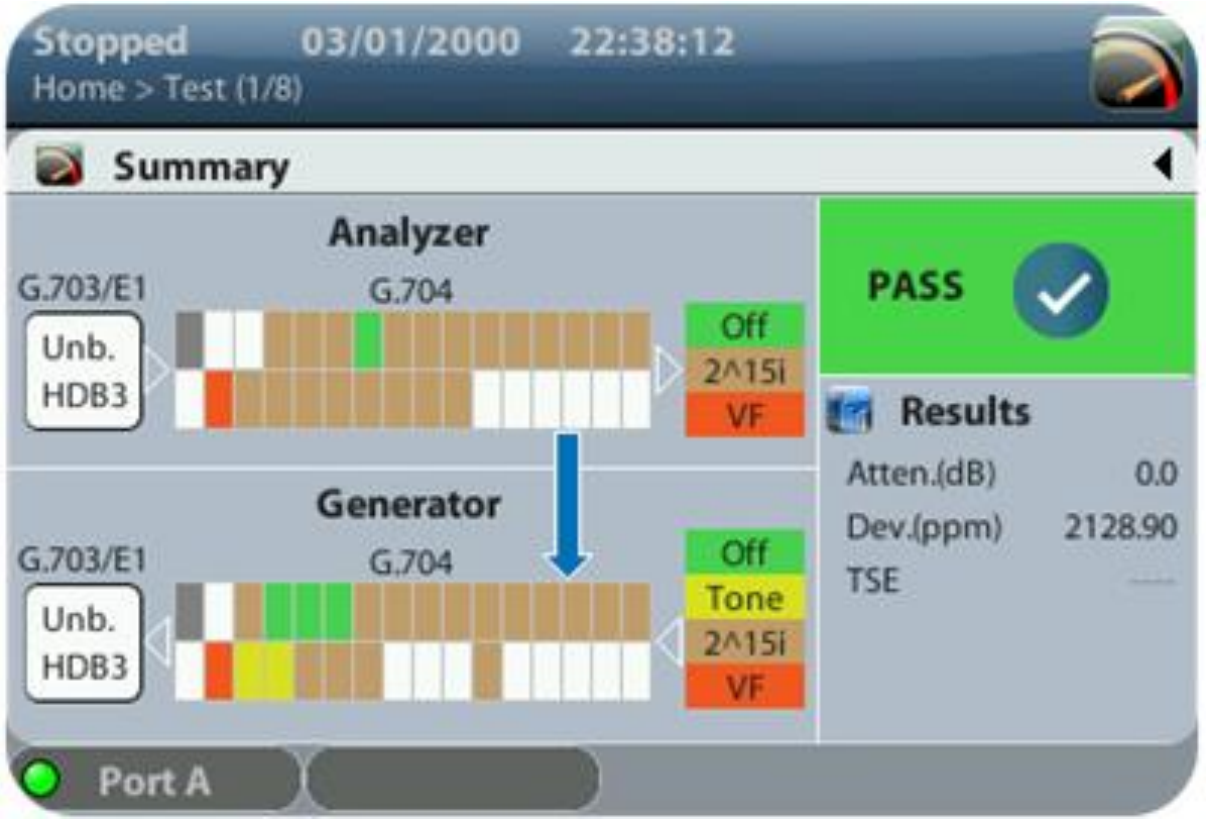


- Rugged, hand-held, battery operated, low-cost, software upgradable design for field use.
- 2xUSB and Ethernet ports.
- IP remote control through Ethernet port.
- Export stored configuration and reports through USB Master port
- Connect a PC to the tester and access to the internal tester file system.
- VF test + earphone + microphone.



Display

- Display 480 x 272 TFT full color screen
- Limited Navigation deep
- SoftLEDs © all events at a glance
- Functional navigation keys
- Landscape ergonomy
- PASS / FAIL at a glance



Main Features

- Supports ITU-T G.711 encoding with A law, G.703 E1 (2.048 Mbit/s), G.704, G.703 co-directional
- ITU-T G.821, G.826, and M.2100 performance analysis. Framed (as per ITU-T G.704) and unframed signals testing
- Jitter measurement as per ITU-T G.823 standard. Pulse mask testing as per ITU-T G.703 standard
- CAS signaling generation and monitoring
- Error detection and alarm generation for detecting bit errors, frame errors, signal defects and anomalies
- Error Insertion Levels - at physical level, frame level, and pattern level
- Error Insertion Modes - Single, Rate, Burst or Continuous burst. BER patterns - Multiple standard, non-standard PRBS, and user defined patterns
- VF tone generation and measurement, drop and insert. Frequency, clock slip, round trip delay, and signal level measurement

Applications

- Installation, commissioning and maintenance of digital networks
- Manage fixed and mobile networks that are using E1 and Datacom backhaul circuits
- Digital voice and data testing, delay measurements, jitter measurement, wander measurement, pulse mask compliance
- Maintaining and troubleshooting PDH, Synchronization, and Datacom links

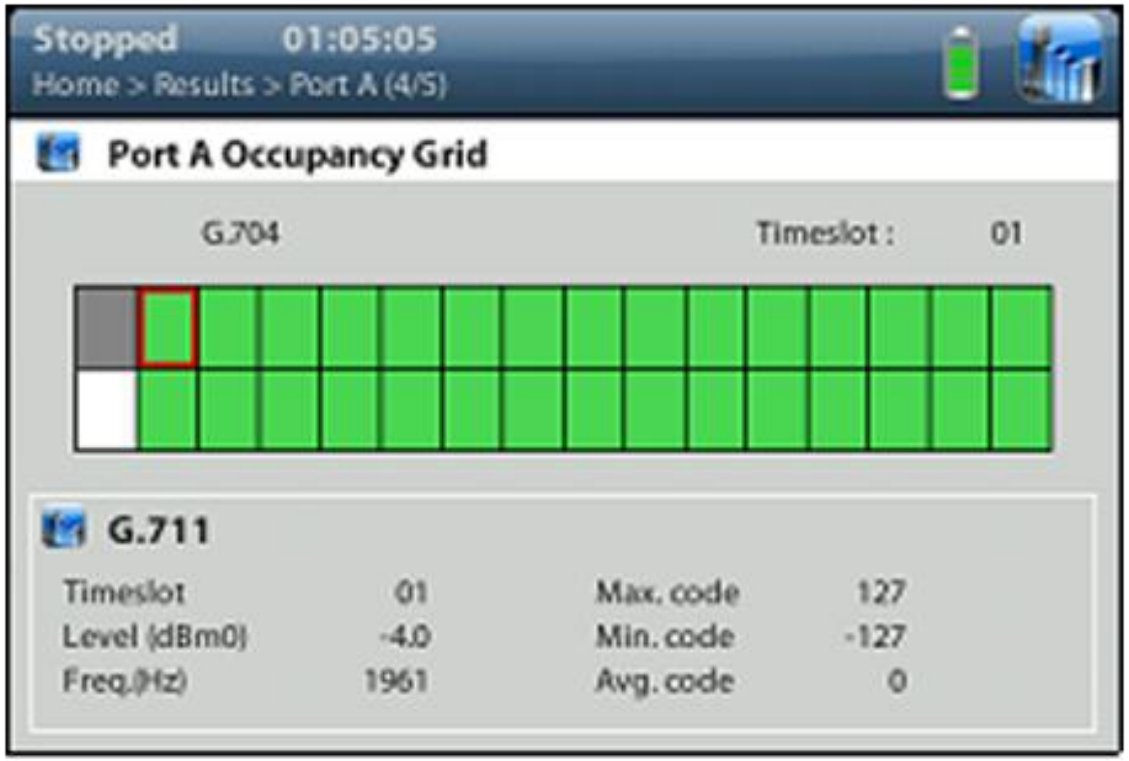
Operation Modes

- E1 monitor – Analyzes life signals without disturbing the network. The monitor connection is suitable for performing non-intrusive monitoring
- E1 endpoint – Emulates an E1 network terminating point. The endpoint connection is suitable for tests where the LinkTest™ Dual E1 tester has to replace a network node or a complete network
- E1 through – E1 through mode is suited for unidirectional or bidirectional intrusive monitoring. The signal could be bypassed from the receiver to the transmitter without any modification but dropping/adding time slots to the signal, inserting events or modifying the FAS / NFAS and CAS time slots is also possible
- Datacom endpoint – Generates and analyzes V.24/V.28, X.21/V.11, V.35, V.36 and EIA-530 datacom signals
- Datacom monitor – Analyzes V.24/V.28, X.21/V.11, V.35, V.36 and EIA-530 datacom signals without disturbing communications between the DTE and DCE
- Codirectional – Generates and analyzes variable bit rate co-directional signals compliant with ITU-T G.703
- Analog – Generates a test audio signal in the analogue audio output

Testing Physical Properties

Voice Frequency Measurement

- Accepts an analogue telephone signal in its audio input and measures its frequency and signal level for each time slot
- Users can configure a threshold for the analogue measurements
- Generates a test audio signal in the analogue audio output

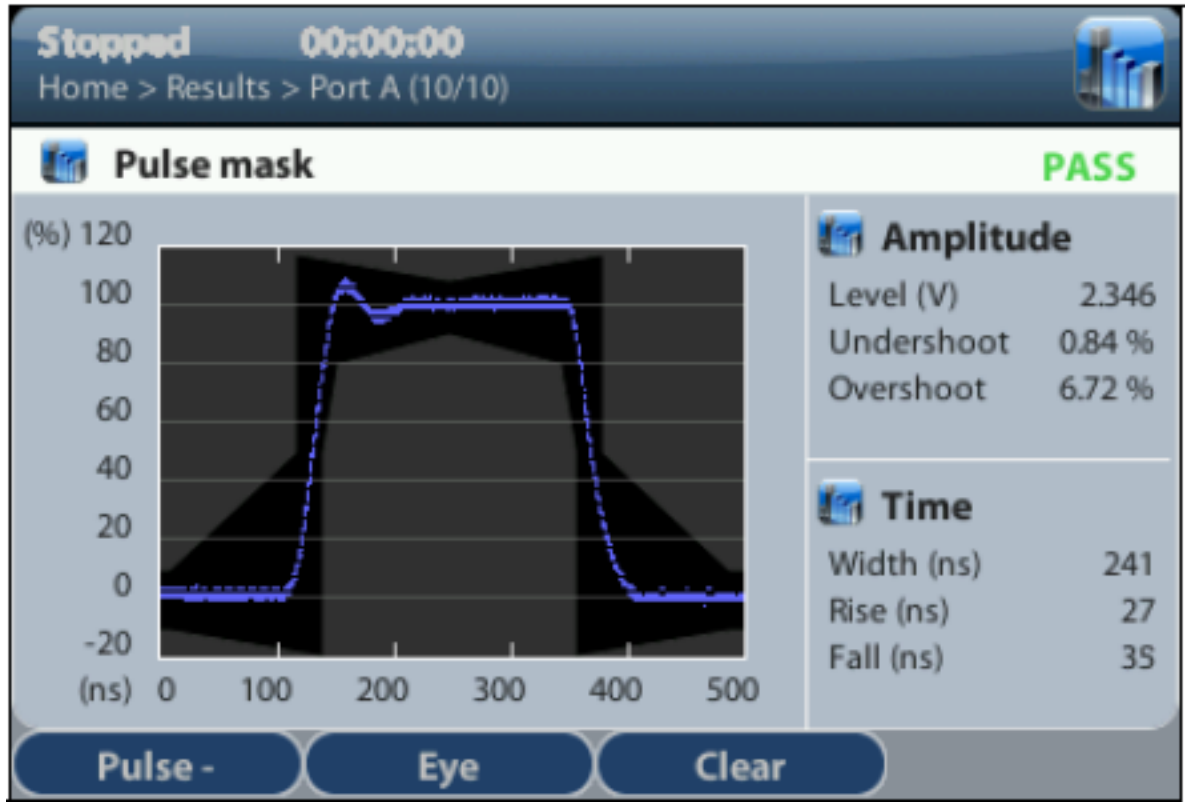


Attenuation, Frequency, and Deviation results

- Analogue Results: Line attenuation (dB), frequency (Hz), frequency deviation (ppm), round trip delay (µs)
- Analogue results include pass / fail indications

Pulse Mask Compliance Testing

- Compliance: ITU-T G.703 standard for the Port A balanced and unbalanced inputs
- Operation modes - E1 monitor, E1 endpoint and E1 through modes



Jitter Generation and Analysis

- Generate and analyze (supported on Port A only) jitter to make sure that the phase fluctuations in network equipment outputs remain under the limits specified by the standards
- Compliance: ITU-T G.825 (SDH) and G.823 (PDH), and Telcordia GR-253 (SONET) and GR-499 (T-carrier)
- Jitter measurement results: peak to peak jitter, positive peak jitter, negative peak jitter, RMS jitter, maximum jitter (user resettable),hits detection and count (user selectable threshold)
- Test the ability of a network element to attenuate or amplify phase impairments using Jitter Generation feature

Delay Measurement

- Verity the delay in Circuit Emulation Services (CES) or legacy E1 services, data communications interfaces and the G.703 co-directional interface
- Operation modes - E1 Endpoint, E1 Through, Datacom endpoint and co-directional
- Measure Round trip delay (RTD) - aggregated delay in the forward and backward paths

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Wander Generation and Analysis

- Wander generation can be used Generate wander (Port A only) to stress network elements and see how phase modulation is accumulated as it is propagated through the network
- Open loop measurement method. Requires reference frequency
- Specify sinusoidal modulation waveform, peak-to-peak amplitude and frequency of the modulating signal
- Statistics results: Time Interval Error (TIE), Maximum TIE (MTIE), TDE

BER Test

- Analyze different kinds of test patterns and signals - Multiple standard, non-standard PRBS, and user defined patterns
- PRBS 9 (ITU-T O.150, O.153), PRBS 11 (ITU-T O.150, O.152, O.153), PRBS 15 (ITU-T O.150,O.151), PRBS 20 (ITU-T O.150, O.153), PRBS 23 (ITU-T O.150, O.151), PRBS 9 inverted, PRBS 11 inverted, PRBS 15 inverted, PRBS 20 inverted, PRBS 23 inverted, all 0, all 1
- User configurable 32 bit word
- Individual time slots can also be inserted and dropped to a secondary low speed interface (Port B only) for its analysis by an external equipment

Datacom Testing

- Add / Drop of E1 Tributaries to Datacom Interfaces
- DTE + DCE for all operation modes
- Capable of testing BER / Performance tests over datacom interfaces and logic analysis of datacom signals through datacom endpoints
- Datacom monitor mode enables analysis of datacom signals between the DTE and DCE without disturbing them
- No extra hardware's or adapters required

Anomalies

- Anomalies: Code, FAS error, CRC error, REBE, MFAS error, TSE, Slip.
- Defects: LOS, LOF, AIS, RAI, CRC-LOM, CAS-LOM, MAIS, MRAI, LSS, All 0, All 1
- Live and history LEDs for all Defects and Anomalies

THANK YOU!