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

**◈GL Communications Inc.**

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.
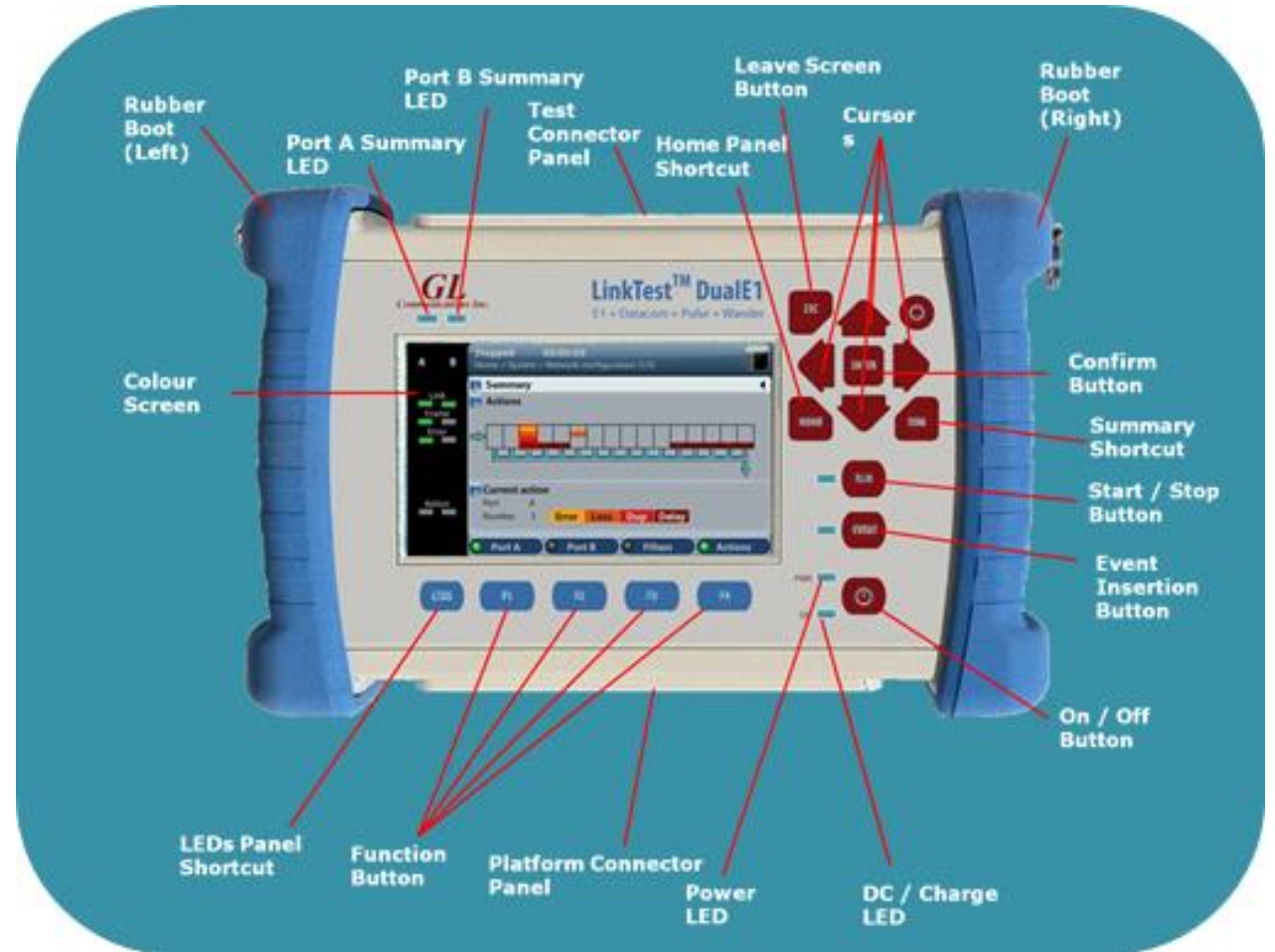
Hardware Specifications

- 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.
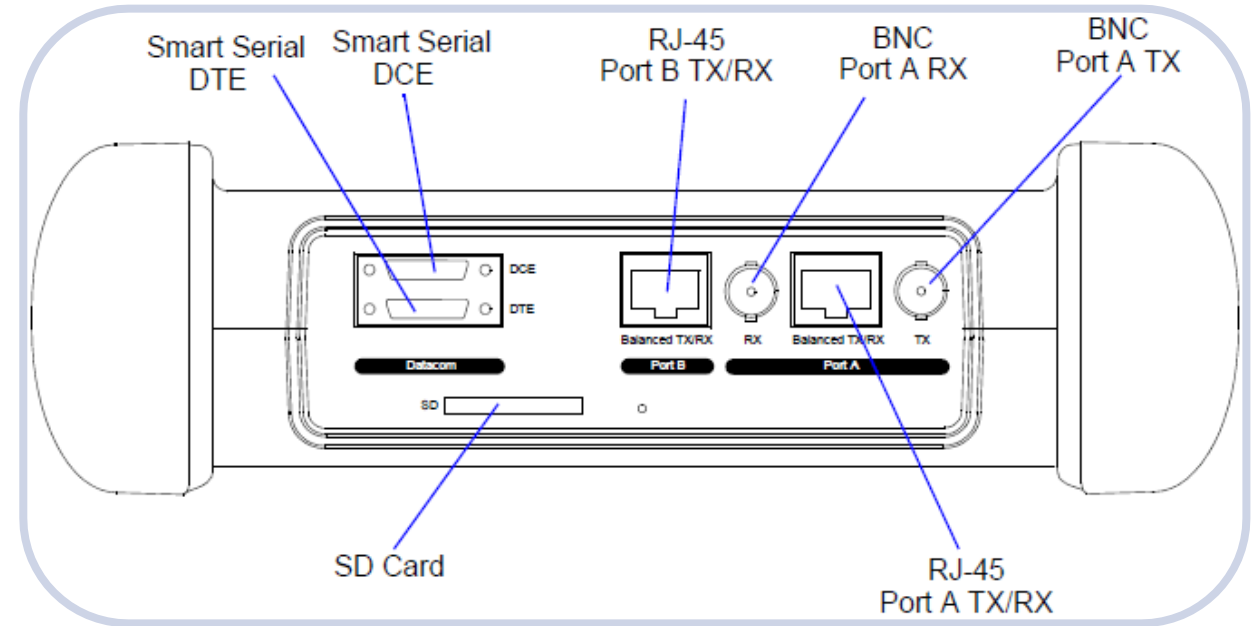
- Rugged, hand-held, battery operated, low-cost, software upgradable design for field use.

- 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.
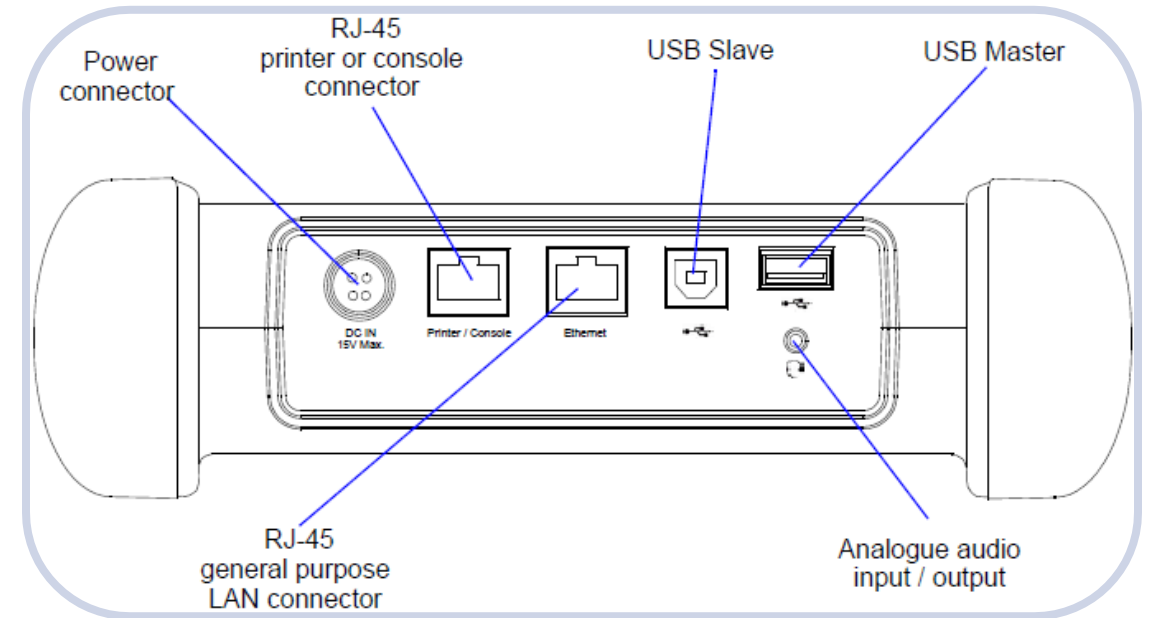
Display

- 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
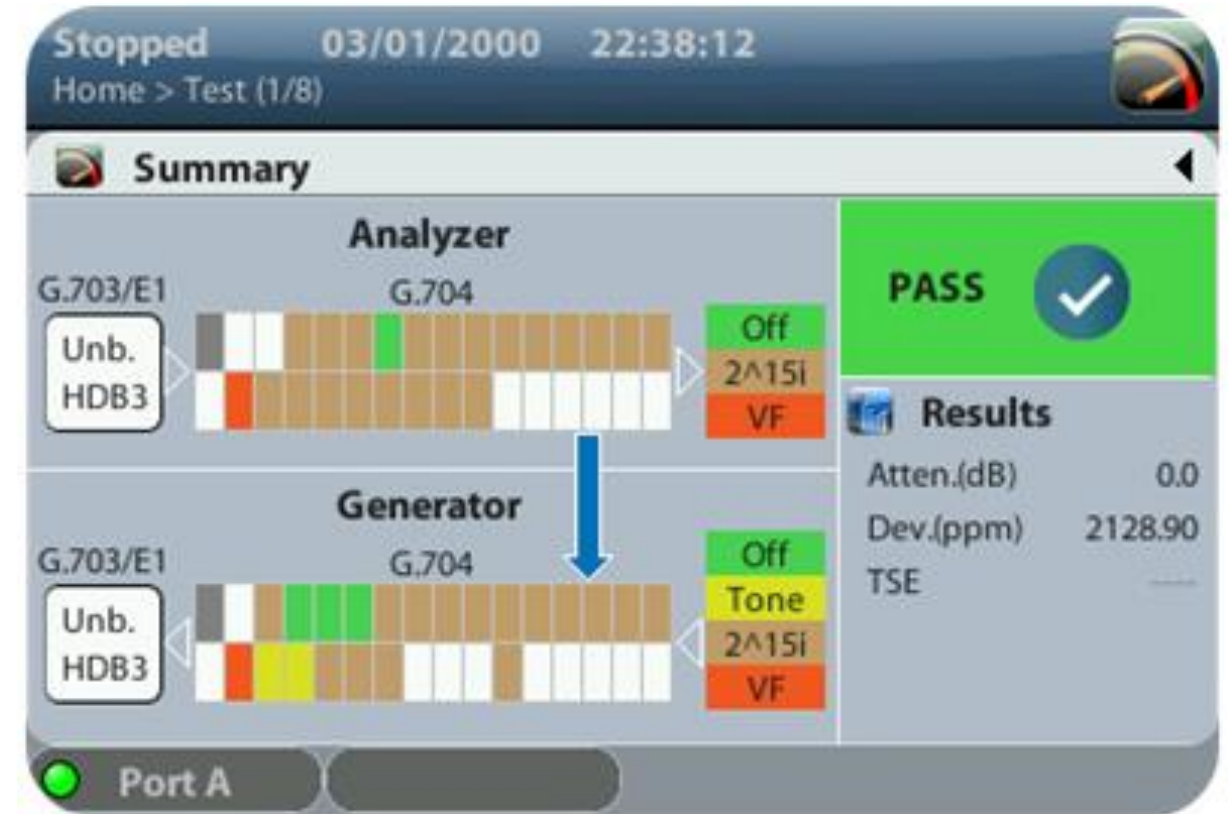
Main Features

- 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.
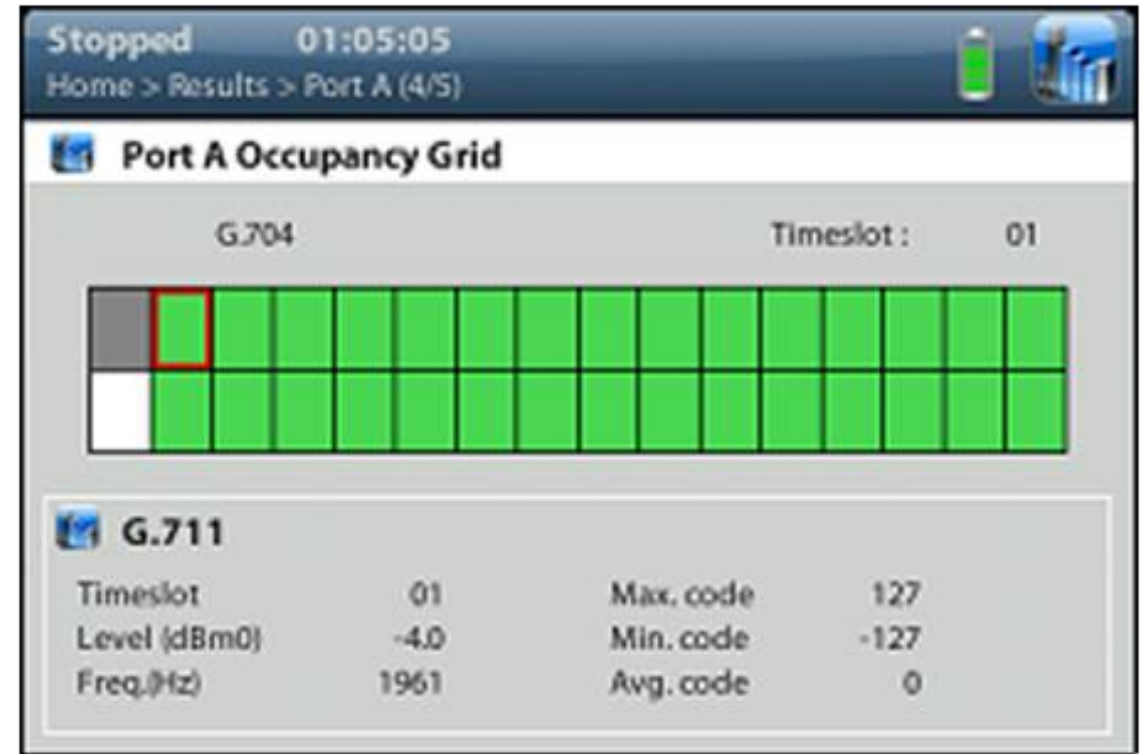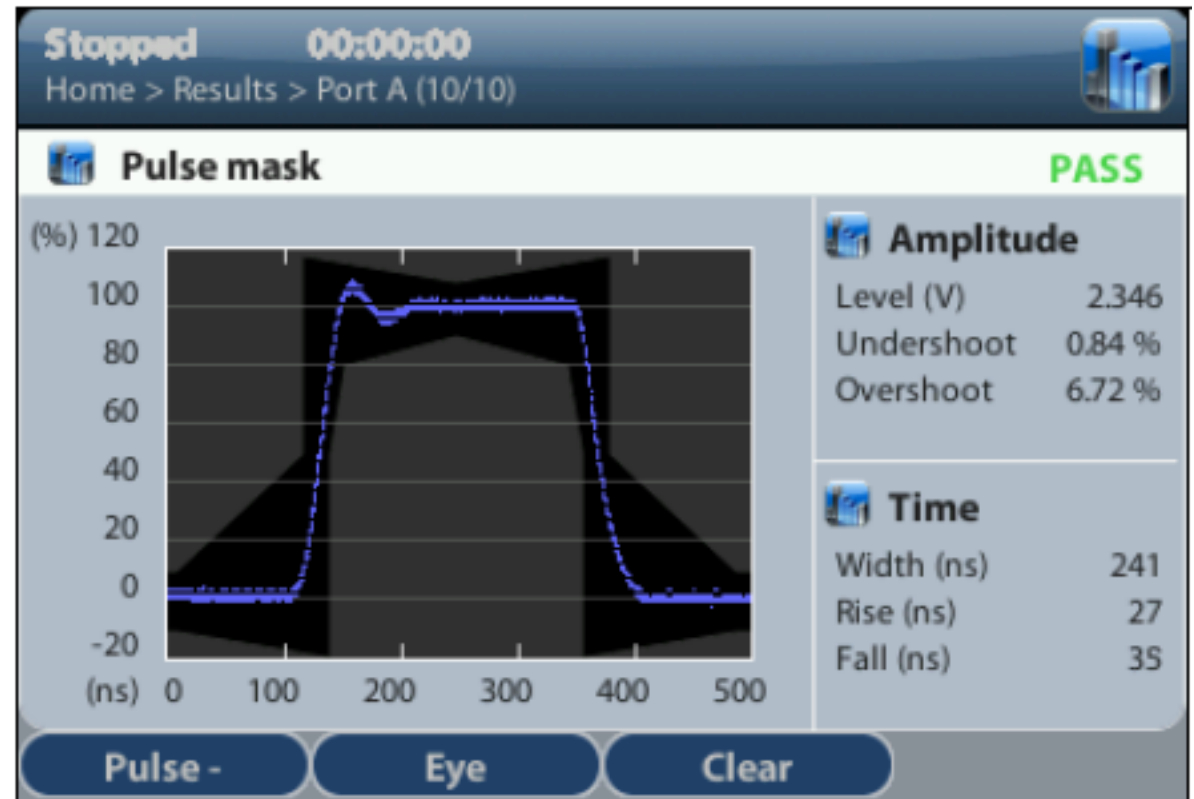
Attenuation, Frequency, and Deviation results

- 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.

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.

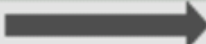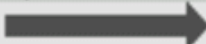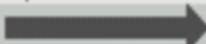- Statistics results: Time Interval Error (TIE), Maximum TIE (MTIE), TDEV.

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.

| Stopped | 03/01/2000 | 22:53:26 |
| Home > Results > Datacom (4/4) | | |

Circuit Map — V.35

DTE <> DCE	Circuit	Signal	Activity	State
→	103	TD	Active	0
←	104	RD	Idle	0
→	105	RTS	Idle	OFF
←	106	CTS	Idle	ON
←	107	DSR	Idle	ON
→	108	DTR	Idle	OFF
←	109	DCD	Idle	ON
→	113	TTC	Active	ON
←	114	TC	Idle	ON
←	115	RC	Idle	ON
→	141	LL	Idle	OFF

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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.

Stopped	00:00:05		
Home > Results > Port A (2/9)			

Anomalies

Event	Count	Rate	Seconds
Code	0	0.000e+00	0
FAS	0	0.000e+00	0
CRC	0	0.000e+00	0
REBE	0	0.000e+00	0
MFAS	0	0.000e+00	0
TSE	32	3.333e-06	2

THANK YOU