



## Product Description

The ET2148 is a sophisticated handheld tester which is capable of identifying a wide variety of circuit conditions yet is extremely easy to use.

Its main function is test the integrity of links by the transmission and reception of a specific test pattern. The tester checks the incoming data for errors, the total number of errors detected being shown on the LCD display.

In order to facilitate this checking procedure, the tester can invoke and release loopbacks in both local and remote equipment capable of responding to the defined data sequences.

### G.703 line Bit Error Rate Test (BERT)

This tests circuits with an unframed data pattern. The test may be run either end-to-end using a pair of testers or with a remote loop using a single tester. When set to BERT mode, the tester initially transmits continuous HDB3 zeros until a valid incoming carrier is detected. The ET2148 then generates the standard unframed PRP15 test pattern (inverted  $2^{15}-1$  pseudo-random bit sequence), and can inject on command either single bit errors or steady streams of errors at a rate of about E-6 (2 errors per second). It will then check the received signals for the presence of the PRP15 pattern. A green LED indicates synchronisation while red flashes indicate bit errors. The user can select either Master or Slave timing options allowing the tester to operate in a wide range of network configurations.

Other data patterns can be generated to aid further testing. These include the transmission of all 1s, all 0s and alternating 1s and 0s.

### Network loopbacks

To invoke a loopback, the tester sends a '00001' pattern repeatedly for 8 seconds.

To release a loopback, the tester sends a '001' pattern repeatedly for 8 seconds.

### Line status

The line is checked for HDB3 signals. A valid HDB3 line signal is shown as green while red indicates no HDB3 signals. Line errors (bipolar violation errors or BPVs) are indicated by red flashes.

When the PRP15 test pattern is **not** selected, the LCD display will automatically count and log the number of BPV errors received.

## ET2148 G703 Tester

- Speed 2.048Mb - G703 Interface
- Network Loop functions
- BERT (PRP15) generator/checker
- Master and Slave Timing options
- Adjustable Sensitivity: 0 to -12 or -43dB
- BPV detection / counter
- 75 or 120ohm matching options
- Battery powered -typically 8 hours

## Specifications

### Switches

**Power** Off / On  
**Sensitivity** -12dB / -43dB  
**Matching** 120Ω / 75Ω

**Master/Slave** Master: ET2148 originates timing.  
 Slave: ET2148 synchronises the output to the clock recovered from the received signals.

**Pattern select** Press to select sequentially all 0s, all 1s, alternate 0s/1s or PRP15.

**Inject error(s)** Injects bit or BPV errors according to mode selected. Press once to inject a single error, or hold to inject 2 errors/second and press to clear.

**Loop Up/Down** Press and hold to send Loop up and Loop down pattern sequences.

**Reset** Resets displayed error counts.

### LEDs

**Low battery** ≤ 30 mins power remaining.

**M / S** Master / Slave clocking mode.

**0 / alt / 1** Shows test pattern selected:  
 all 0s / both = alternating / all 1s.

**PRP15** Shows PRP15 test pattern is being sent. Flashes off when errors are sent.

**U / D** U flashing: Loop up is being sent.  
 U steady: Looped at distant end.  
 D flashing: Loop down is being sent.

**Line status** Green: valid HDB3 signals detected.  
 Red: no valid HDB3 signals detected.  
 Yellow flash: BPV errors detected.

**0 / 1** Shows received 0s or 1s.

**A0s** Fewer than three 1s seen in 2048 bits.

**AIS** Fewer than three 0s seen in 2048 bits.

**PRP15 sync/error**  
 Green: error-free test pattern received.  
 Red flashes: test pattern errors.

### Line

**Matching** 75Ω or 120Ω  
**Return loss** >15dB (51kHz to 3.072MHz)  
**Dynamic range** 0 to -12db or 0 to -43dB  
**Isolation** typically 3kV transmit to receive  
**Transmit** pulse amplitude and masks to G.703

### Physical

**Size** 65x120x22mm (excluding connectors)  
**Weight** 140g (5oz) approx (including batteries)  
**Case** ABS to UL-94HB  
**Power**  
**Source** 2 × AA cells (MnAlk recommended)  
 Life: typically 8 hours.  
 5V dc from lump plug (tip positive)