

### QUICK CARD

#### **DS3 Bit Error Rate Testing (BERT)**

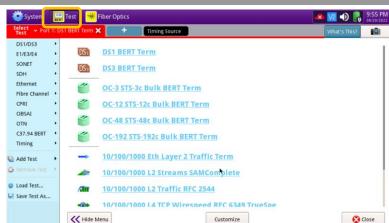
This quick card describes how to configure and run a DS3 Bit Error Rate Test to a hard loop, or another similarly configured T-BERD.

- T-BERD/MTS 5800 equipped with the following:
  - BERT software release V30.1.0 or greater
  - C5DS3STS1 test option: DS3/STS-1 Electrical
  - C5DUALPORT test option: Dual Port option (required on T-BERD 5800-100G only)
- Two (2) mini-BNC to BNC adapters (CB-MINITOBNCQTY1) for T-BERD 5800-100G and T-BERD 5882 only
- One of the following DS3 cable sets to connect the T-BERD 5800 DS3 Port(s) to the line under test:
  - Two (2) BNC to BNC cables (CB-30662)
  - Two (2) BNC to WECO 440A cables (CB-015837)

#### LAUNCH TEST

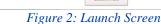
- 1. Press the Power button 6 to turn on the T-BERD.
- Press the **Test** icon **B** test at the top of the screen to display the **Launch Screen**.
- Using the Select Test menu, Quick Launch menu, or Job Manager, launch the DS1/DS3 ► DS3 ► DS3 BERT ► Terminate test.

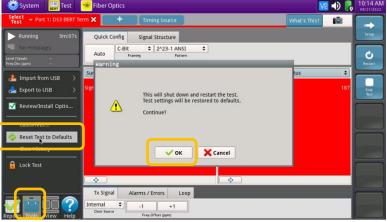




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Figure 1: Equipment Requirements





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Figure 3: Tools Panel



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#### CONFIGURE TEST

- The following Information is needed to ٠ configure the test:
  - DS3 Framing (C-BIT or M13)
  - Clock Source (Internal or Recovered)
  - Test Patterns(s)
  - BER Pass/Fail Threshold



Figure 4: Work Order

an the top right 1. Press the **Setup** soft key side of the screen.





Lecki C	🔆 Fiber Optics		<u>ve</u> 📣 🔒	10:59 AM 08/21/2022
Select v Port 1: DS3 BERT Te	rm 🗙 🛛 +	Timing Source	What's This?	<b>(</b>
Interface	Framing	C-Bit		Results
Framing		<u>con</u>		
Pattern	Tx Far End Alarm	Idle 🗢		
Loop				
Service Disruption				
Performance				
Timed Test				



🔯 System 🛛 🐺 Test 🛛 😽 Fiber Optics	V2 🜒 🕞 11:00	0 AM
Select - Port 1: DS3 BERT Term 🗙 + Timing	g Source What's This?	
Interface Pattern Mode	ANSI 🗘	15
Framing	2^23-1 ANSI	-1
Pattern	2^15-1 ANSI	
Loop	2^15-1 Inv ANSI	
Service Disruption	2^20-1 ANSI	5
	2^20-1 Inv ANSI	
Performance	2^20-1 ITU	
Timed Test	2^20-1 Inv ITU	
	2^23-1 ANSI	
	2^23-1 Inv ANSI	
	All Ones	
	All Zeros	
	100	
	1010 (Blue)	
	1100 (Idle)	
	Delay	
	Live	
	User Bit	
	User Byte	
Reset Test to		
V Defaults		



- 2. Select the indicated folders and configure your test as follows. Leave all other values at default, unless specified in the work order.

Folder	Option	Value(s)	
Interface	Rx Input	Term	
	Clock Source	If unknown,	
	Clock Source	select "Internal"	
	Clock Offset 0 ppm		
	LBO	0 dB	
Froming	Froming	lf unknown,	
Framing	Framing	select "C-BIT"	
Dettern	Pattern Mode	ANSI	
Pattern	Pattern	2^23-1 ANSI	

3. Press the **Results** soft key to view the Test Results screen.



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#### CONNECT TO LINE UNDER TEST

- T-BERD 5811 AND T-BERD 5822 mainframes have BNC ports for DS3 testing. You may use BNC to BNC or BNC to WECO cables to connect the T-BERD to the line under test.
- T-BERD 5882 and T-BERD 5800-100G mainframes have mini-BNC ports for DS3 testing. CB-MINITOBNCQTY1 adapters are required to adapt to a standard BNC connector. You may use BNC to BNC or BNC to WECO cables to connect the adapter to the line under test.



Figure 8: BNC Connectors



Figure 9: Mini-BNC Connectors

### RUN TEST

- Using drop-down menus , select
  "Interface/Signal" for the right results display.
- 2. Press the Restart soft key
- 3. Verify the following:
  - **Summary** LED is green.
  - Signal Present LED is green.
    If the LED is red, check your cables.
    Tx and Rx may be reversed.
  - ► Frame Sync LED is green.
  - ► **RX Frequency (Hz)** = 44736000 +/- 895 Hz.

Quick Config \$ 2^23-1 Status Interface ignal Losses ignal Loss Seconds Rx Level (Vpeak) Rx Level (dBdsx) Freq Measurement Refere Rx Frequency (Hz) Rx Freq Deviation (ppm) Rx Freq Max Deviation (pp ALL SUMMARY AA 736 ( RESULTS 0.0 OK 0.00E+00 BPV Rate BPV Error Second: cess Zeros Coun Tx Signal Alarms / Errors Loop -1 +1

Figure 10: Results, Interface/Signal

Select ~ Port 1: DS3 BERT To	erm 🗙 🛛 🕇	Timing Source	_		What's This?		-
Running 2m:24s  No messages	Quick Config Auto	Signal Structure	•				Setup
Level (Vpeak) 85 Freq Dev (ppm) 0.0 Summary	Summary	¢ Status	_	Payload	¢   BERT		Restar
PDH Signal Preent Frame Sont C Clift Frame C Clift Frame Horaco Horaco	and the second second	. SUMMARY RESULTS OK		Pattern Sync Losses Pattern Sync Loss Se Pattern Slips Pattern Slip Seconds Bit/7SE Errors Bit/7SE Error Rate	conds	0 0 0 0.00E+00	Stop Tert
		1	_	*			

Figure 11: Results, Payload BERT

4. Using drop-down menus :, select "Payload/BERT" for the right results display.

- 5. Allow the test to run for desired duration and verify the following:
  - ▶ Pattern Sync LED is green.
  - Bit/TSE Error Rate result does not exceed your required threshold. (0.00E+00 if pass/fail threshold unknown)



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- 6. In the T-BERD's **Quick Config** menu, change "**Pattern**" to the next value in the test plan.
- 7. Press the Restart soft key 🙎 to reset results.
- 8. Allow test to run for desired duration and verify the following:
  - ▶ Pattern Sync LED is green.
  - Bit/TSE Error Rate does not exceed your required threshold.
    - (0.00E+00 if pass/fail threshold unknown)
- 9. Repeat steps 6 through 8 for all **Patterns** in the test plan. Patterns may include:
  - Delay: Measures Round Trip Delay (RTD) instead of Bit Errors (RTD values are shown instead of BER in the "Payload/BERT" results display)

Others

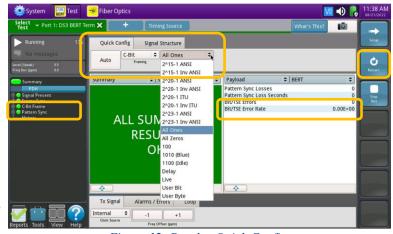


Figure 12: Results, Quick Config

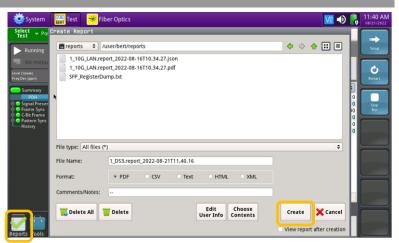


#### Figure 13: Results, Round Trip Delay

#### CREATE REPORT



3. A report will be saved to the T-BERD 5800's **/bert/reports** folder.



#### Figure 14: Create Report

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