SONET Bit Error Rate Testing (BERT)

This quick card describes how to configure and run a SONET Bit Error Rate Test at the full concatenated line rate. Please note that the T-BERD can also test channelized payloads (DS1, VT1.5, and STS-n). Please refer to the T-BERD 5800 User’s Guide for information.

LAUNCH TEST

1. Press the Power button to turn on the T-BERD.
2. Press the Test icon at the top of the screen to display the Launch Screen.
3. Using the Select Test menu, Quick Launch menu, or Job Manager, launch the SONET Bulk BERT test on Port 1 for the desired Optical Carrier level. For Example: 
   SONET ► OC-3 ► STS-3c Bulk BERT ► P1 Terminate.
4. Tap to open the Tools Panel and select .
5. Press to continue.
The following Information is needed to configure the test:

- Optical wavelength (typically, 1310nm or 1550nm)
- Test Pattern(s) (default is 2^23-1 ANSI)
- BER Pass/Fail Threshold

1. Press the Setup soft key on the top right side of the screen.
2. Select the Interface/Connector folder.
3. Insert desired SFP into the Port 1 SFP+ slot on the top of the T-BERD.
4. Review SFP information in the Connector tab:
   - Verify that the SFP operates on the required wavelength (1310nm or 1550nm).
   - Verify that the SFP supports the required optical carrier level (OC-3, OC-12, OC-48, or OC-192).
   - Note the Min and Max Tx Levels (dBm) and Max Rx Level (dBm) to assess if optical attenuators are required.
5. Select the indicated folders and configure your test as follows. Leave all other values at default, unless specified in the work order.

<table>
<thead>
<tr>
<th>Folder</th>
<th>Option</th>
<th>Value(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface, Signal</td>
<td>Clock Source</td>
<td>Select “Recovered” unless you are testing dark fiber with no SONET equipment</td>
</tr>
<tr>
<td>Pattern</td>
<td>Pattern Mode</td>
<td>ANSI</td>
</tr>
<tr>
<td></td>
<td>Pattern</td>
<td>2^23-1 ANSI</td>
</tr>
</tbody>
</table>

6. Press the Results soft key to view the Test Results screen.
T-BERD/MTS 5800 Portable Network Tester

QUICK CARD

CONNECT TO LINE UNDER TEST

- Use the VIAVI P5000i or FiberChek Probe microscope to inspect both sides of every connection being used (SFP, attenuators, patch cables, bulkheads)
  - Focus fiber on the screen.
  - If it appears dirty, clean the fiber end-face and re-inspect.
  - If it appears clean, run inspection test.
  - If it fails, clean the fiber and re-run inspection test. Repeat until it passes.
- If necessary, insert optical attenuators into the SFP TX and/or RX ports.
- Connect the SFP to the port under test using a jumper cable compatible with the line under test.

RUN TEST

1. Using drop-down menus , select “Payload/BERT” for the right results display.
2. Select the Laser tab in the Actions panel, and press . The button will turn yellow and be relabeled .
3. Press the Restart soft key .
4. Verify the following:
   - **Level (dBm)** is within the Rx Level range of the SFP.
   - **Summary** LED is green.
   - **Signal Present** LED is green.
   - **Frame Sync** LED is green.
   - **Path Pointer Present** LED is green.
   - **Pattern Sync** LED is green.
   - **Summary/Status** results shows ‘ALL SUMMARY RESULTS OK’
5. Allow the test to run for desired duration and verify the following:
   - **Bit/TSE Error Rate** result does not exceed your required threshold. (0.00E+00 if pass/fail threshold unknown)

Figure 8: Inspect Before You Connect

Figure 9: Results, Payload BERT

Figure 10: Troubleshooting Tips
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 or Round Trip Delay does not exceed your required threshold.
   - 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.

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**CREATE REPORT**

1. Tap ![report icon] to open the **Reports** Panel and select ![create report icon].

2. Tap ![create icon].

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