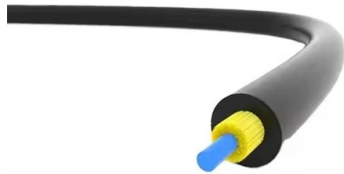


BERT Bit Error Rate Tester Calibration



Overview

Bit Error Ratio Testers | KeysightLearn how to tune and calibrate a bit error ratio tester's (BERT) stress signal amplitude, channel equalization, and inse.

Key Takeaways

A Bit Error Rate Tester (BERT) measures the error rate in digital communication systems, and proper calibration and configuration are essential for accurate results.Overview of BERT

A BERT is used to evaluate the performance of digital communication links by comparing transmitted and received bitstreams to detect errors. The Bit Error Rate (BER) is calculated as the ratio of erroneous bits to the total transmitted bits, providing insight into signal quality, noise, distortion, and jitter in the system .

Calibration Steps

- Power On and Initialization: Connect the BERT to a known reference signal or loopback source to verify proper operation. Ensure the device is grounded and powered using the specified power cord .
- Driver and Software Installation: For PC-based BERTs like FarSync, install the required drivers and software using the provided fulfillment code and installer .
- Set Test Parameters:
- Data Rate: Match the transmission rate of the system under test.
- Pattern Selection: Choose a test pattern (e.g., PRBS7, PRBS15) appropriate for the system.

- Test Length: Define the number of bits or duration for the test.
- Clocking and Interface Mode: Configure internal/external clocking and synchronous/asynchronous interface settings .
- Verify Signal Levels: Adjust the output amplitude and ensure the signal is within the acceptable range for the receiver.

Usage Instructions

- Connect the BERT: Attach the BERT to the line under test using the appropriate interface (USB, PCIe, or coaxial) .
 - Start the Test: Click the Start button in the BERT software or hardware interface. The BERT will transmit the selected pattern and monitor the received data for errors .
 - Monitor Errors: Observe the error counters, which may include:
 - Bit Errors
 - Block Errors
 - Errored Seconds
 - Parity and Framing Errors
 - Loss-of-Sync (LOS) indicators if synchronization fails .
 - Record Results: Test results are retained until the test is restarted or reset. Use these results to calculate BER and assess link quality .
 - Troubleshooting: If the BERT cannot synchronize, check the physical connection, test pattern, and clock settings. Ensure the line is continuous and free of faults .
- #### Safety and Best Practices
- Only trained personnel should operate the BERT, especially when connecting to live systems .
 - Follow grounding and power safety procedures to prevent electric shock.
 - Use personal protective equipment if hazardous voltages are present.
 - Retain all instructions and comply with local and national safety codes .

Summary

Proper calibration, parameter configuration, and monitoring are critical for accurate BER measurement. By following these steps, users can reliably assess the performance of digital communication systems, identify errors, and optimize system performance .

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Bit error rate testers (BERT).

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