

Selection of Dedicated BERT Bit Error Rate Testers for Power Systems



Overview

This video was associated with the source search result. Verify technical details against current product documentation and project requirements.

Key Takeaways

Choosing the right BERT for power systems requires matching data rates, signal formats, and compliance testing capabilities to the specific communication channels and devices under test. Key Considerations for Selecting a BERT



1. **Data Rate and Signal Format:** Select a BERT that supports the maximum data rate of your power system communication links. Modern high-performance BERTs, such as Keysight M8040A, handle NRZ and PAM4 signals up to 64 GBaud, suitable for high-speed serial interfaces in power electronics and smart grid communications . Ensure the BERT can generate and analyze the specific line coding used in your system. 2. **Device Under Test (DUT) Compatibility:** The BERT must be compatible with the DUT, whether it is a transceiver, optical link, or digital interface. Modular BERTs allow configuration for single-lane or multi-lane testing, which is critical for multi-channel power system communication networks . 3. **Error Detection and Analysis:** A BERT should provide precise bit error rate (BER) measurement, including advanced timing analysis, jitter tolerance, and stress testing. This ensures accurate characterization of signal integrity and reliability under operational conditions . 4. **Compliance and Standards Testing:** For power systems, BERTs should support relevant standards such as Ethernet (10G/100G/400G), PCIe, USB, and optical transceivers. Automated compliance testing simplifies validation of devices against industry specifications . 5. **Environmental and Field Considerations:** If testing in high-voltage or field environments, consider portable or handheld BERTs like VIAVI T-BERD/MTS series, which are suitable for on-site verification of network integrity and signal quality . 6. **Advanced Features:** Look for BERTs with de-emphasis, adjustable ISI, clock recovery, and equalization to reduce setup time and improve measurement accuracy. Remote head configurations can minimize signal degradation for long or lossy channels .

Recommended BERT Configurations

- **High-Performance Lab Testing:** Keysight M8040A or M8050A for multi-lane, high-speed R&D and compliance testing up to 64 GBaud with PAM4 and NRZ signals .
- **Field or On-Site Testing:** VIAVI T-BERD/MTS-5800 series for portable, multi-protocol testing up to 100G or 800G, suitable for power system network verification .
- **General Purpose or Manufacturing:** MultiLane BERTs with MSA-compliant interfaces for flexible DUT connectivity and production testing .

Summary

Selecting a dedicated BERT for power systems involves evaluating data rate, signal format, DUT compatibility, BER measurement capabilities, compliance testing, and environmental suitability. High-performance lab BERTs are ideal for R&D and compliance, while portable BERTs are suited for field verification. Advanced features like jitter analysis, equalization, and remote head configurations enhance accuracy and reduce setup complexity, ensuring reliable testing of power system communication links .

Article Content

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