

How to simulate signals using an FC interface module



Overview

AIT's compact portable Fibre Channel Simulation and Analyzer tool. Controlled and powered by USB or Ethernet.

Key Takeaways

You can simulate signals on a Fibre Channel interface module using specialized hardware or software tools that generate, monitor, and analyze FC traffic in real time. Using Hardware FC Interface Modules

High-performance FC interface modules, such as AIT's PXIe-FC4 Simulyzer or the UXI-FC4 dual-port simulator/analyzer, allow you to generate and capture Fibre Channel signals for testing nodes or switches . These modules provide:

- Data generation/simulation: Create FC frames according to protocol standards.
- Monitoring and analysis: Capture live data buffers and display them chronologically.
- Sequencer FIFO: Access individual frame locations for detailed signal inspection.
- API control: Use C/C++ SDKs to automate signal generation and capture in custom applications. These modules support multiple FC protocols and can connect via PXI Express, USB, or Ethernet, enabling flexible integration with test systems.

Using Software Simulation Tools

For software-based simulation, tools like MATLAB & Simulink with the FC-PI-6 Compliance Kit allow you to model and validate FC channels . Steps include:

- Open the FC-PI-6 kit in the Serial Link Designer app using the openSignalIntegrityKit function.
- Insert your channel design (host board and module board interconnect).
- Run simulations to measure insertion loss, return loss, crosstalk (FEXT/NEXT), and bit error rate (BER) compliance.
- Compare results against FC-PI-6 specification masks to determine if the channel meets performance requirements.
- Iterate design if the channel fails compliance, adjusting parameters and re-simulating. This approach is ideal for pre-hardware validation and ensures high confidence in channel performance before physical testing.

Best Practices

- Verify interface configuration: Ensure port speed, buffer credits, and FEC settings are correctly configured on the FC module .
- Use live capture data: Accessing real-time frame data helps identify timing or protocol issues.
- Automate tests: Leverage SDKs or scripting to run repeated simulations and collect statistics efficiently.
- Combine hardware and software: Use software simulation for design validation and hardware modules for real-time signal verification. By combining these methods, you can effectively simulate, monitor, and analyze Fibre Channel signals to validate designs, troubleshoot issues, and ensure compliance with FC standards.

Article Content

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UXI-FC

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Fibre Channel Modules with a Difference

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An FC fabric is a switched network topology that interconnects FC devices using FC switches, usually to create a SAN. An FC switch

How do you program the communication blocks FC5 and FC6?

The sample program shows the functions of the communication blocks FC5 "AG_SEND" and FC6 "AG_RCV" using an

How does a FC function work in Siemens PLC?

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Understanding FCoE-FC Gateway Functions

Login and Logout Each of the native FC interfaces on the gateway performs a fabric login (FLOGI) to the FC switch when each

Tecnomatix Process Simulate: Signals Connection Tool Tutorial

Signal Mapping is a necessary step for Virtual Commissioning simulation. This video

Fibre Channel Layers

5 bre Channel FC-4 Overview: Fibre Channel FC-4 is the fourth layer of the Fibre Channel (FC) protocol stack. It

PCIe-FC4

PCIe-FC4 PCIe-FC4 Fibre Channel Test & Simulation Interface for PCI Express Key Features Half-size four lane PCIe board

UCS Fibre Channel End Host & Uplink Config

LAB Fibre Channel Switching Mode, End Host Mode, and Uplink Configuration Task: Provision the UCS system to run in Fibre

Fibre Channel Interoperability

About the FCIA "The Fibre Channel Industry Association (FCIA) is a mutual benefit, non-profit, international

Learn How to Use FCs and FBs for Programming Siemens PLCs

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Program blocks for SIMATIC NET S7 CPs

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The committee charged with developing Fibre Channel technology was established within the American National Standards Institute

Inside a Modern Fibre Channel Architecture - Part 1

FC-0 the physical interface (FC-0) consists of transmission media, transmitters, and receivers and their interfaces

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Physical Fibre Channel Interfaces Cisco Nexus 5000 Series switches support up to sixteen physical Fibre Channel

Cisco Nexus 5000 Series NX-OS Fibre Channel Command Reference

To configure a Fibre Channel interface on a Cisco Nexus 5000 Series switch, use the interface fc command. To revert

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Characterize and validate the performance of a Fibre Channel FC-PI-6 channel design. This kit is designed for analysis of a host

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Circuit and system designers must use all of the tools at their disposal to create accurate, robust designs that work well the first time.

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