VIAVI Solutions

Data Sheet

VIAVI
Xgig Fibre Channel Jammer

The powerful VIAVI Solutions Xgig© Fibre Channel (FC) Jammer can modify frame contents, insert errors, and manage streams on live full-line-rate traffic. It can also insert various link errors at various FC speeds.

The Xgig Jammer enables System Quality Assurance (SQA) engineers and network managers to manipulate live traffic on a link or network to simulate errors in real time and to verify that the recovery process operates as expected when the Xgig Analyzer is cascaded with it. Normally, the Xgig Jammer acts as a digital pass-through device through which network traffic flows, as Figure 1 shows. However, when it encounters a user-defined event, or trigger condition, within the network traffic, it will either replace the trigger contents with new information or it will insert a new frame that the user provides. For example, a small computer system interface (SCSI) Write_CMD can be replaced with an Idle, delete Write_CMD, as shown in Figure 2.

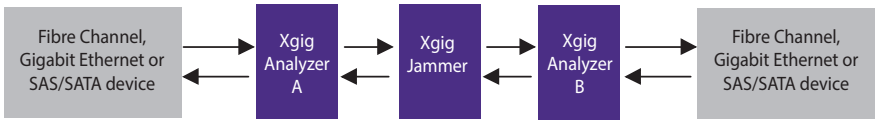

Figure 1. Xgig FC Jammer Test Setup with Analyzer

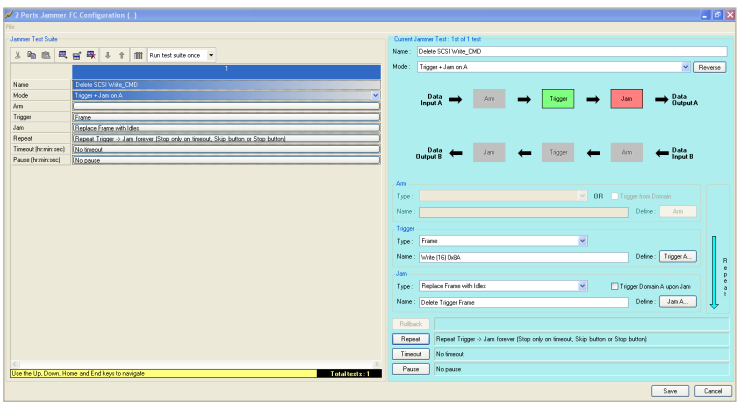

Figure 2. Jammer GUI Configuration

Key Features

- Available at rates of 1, 2, 4, 8, and 16G FC
- Injects errors in FC-0 to FC-4 layers
- Modifies bits, bytes, and words
- Truncates or deletes frames
- Jams order sets/primitives
- Enables passing, overwriting, or recalculating the CRC and Checksum

Benefits

- Injects errors with or without frame corruptions
- Operates in every topology with every upper-level protocol
- Supports data rates of 1.0625, 2.125, 4.25, 8.5, 14.025 Gbps

Applications

- Put Jammer in line with traffic for error injection to emulate network, link, exchange, and frame errors
- Verify FC device functionality
- Perform regression tests on FC devices

Supported Blade Options

The Xgig FC Jammer is available on these blades:

- The Xgig 4G Fibre Channel blade supports 1/2/4G FC and 1 GbE Jammer
- The Xgig 8G Fibre Channel blade supports 1/2/4/8G FC Jammer
- The Xgig 16G Fibre Channel blade supports 16G FC Jammer

Jamming Options

Jamming events are available as ordered sets or frames. The following list details the events on which the Jammer operates:

Ordered Set and Primitive Modifications

Users can replace an ordered set and primitive modification with another one, or corrupt it with errors. In addition to16G speed, user can also jam a control character.

Frame Modification

- Replace any word in a frame with a user-defined value or change it at random
- Truncate or replace frames with idles or other ordered sets
- Correct CRC and checksum by creating a valid frame or packet
- Insert one or multiple bit errors in the designated fields

Frame Insertion (16G only)

- Insert a pre-defined frame after the trigger frame
- Repeat the trigger frame

Exact Frame Jam

- Modify the trigger Fibre Channel over Ethernet (FCoE) frame to make it longer or shorter
- Split one FC frame into two
- Merge two FC frames into one

Triggering Configuration

Configuring trigger conditions allows for the following logical options:

- **ARM:** defines the frame or ordered set prior to modification
- **TRIGGER:** defines the frame or ordered set to be modified
- **JAM:** defines the modifications to be made to the trigger target
- **ROLLBACK:** defines the duration of time or word count allowed when looking for the Trigger after finding the Arm, before returning to look for the Arm again

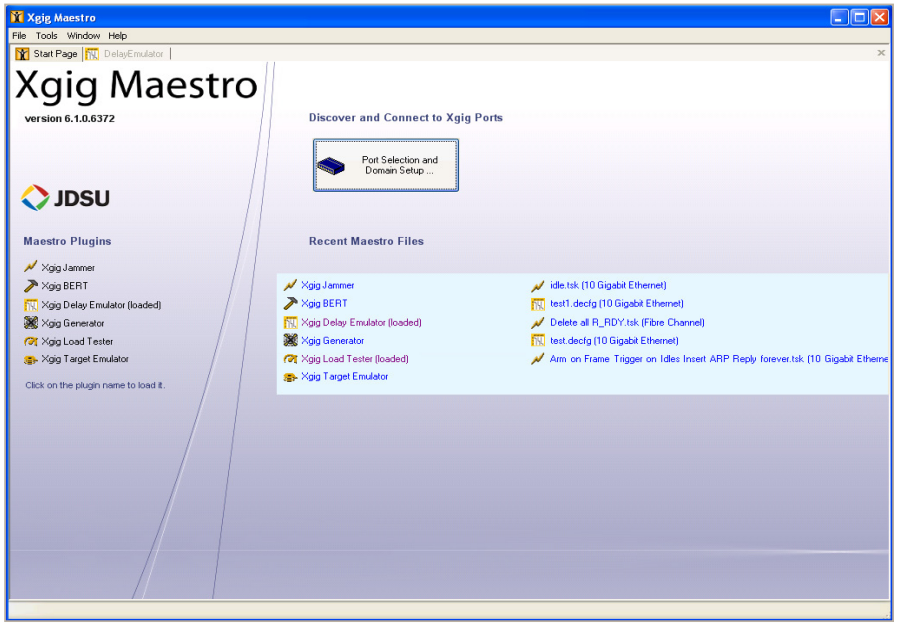

Figure 3. Maestro GUI

General Features

- Execute multiple jam tests from a test stack
- Share triggers with other Xgig devices (analyzers) in the same Xgig domain

Automation Test

FRunner lets users control the Xgig Jammer through scripts for automated testing. It also supports any combination of customized triggers and controls and can be programmed using Perl. C- and Tcl-based application programming interfaces (APIs) also available for scripting.

Using the Xgig FC Jammer with Xgig Analyzers

It is possible to use the Xgig FC Jammer in conjunction with one or more Xgig Analyzers to capture modified traffic as well as the system's response to it. The Xgig Jammer can trigger the analyzer or, conversely, the analyzer can arm the Jammer.

VIAVI Maestro Software

VIAVI Maestro software suite, shown in Figure 3, controls the Xgig Jammer hardware.

Maestro is the controller for Xgig-generation products. In addition to the Xgig Jammer, Maestro supports other functions including a protocol-aware FC and Gigabit Ethernet bit error rate test (BERT), an FC and 10G Ethernet load tester, a 10G Ethernet delay emulator, and a SAS/SATA generator.

Maestro enables managing multiple tests through one screen. The configuration manager lists pre-defined jamming configurations that users can drag and drop directly into the device column. The configurable device column summarizes detailed status information for each port. The ports manager at the bottom can be used to control multi-port tests at one time and lists a short version of the port status.

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