

# Enterprise SSD Standardized Test System utilizing Boundary Scan, LabVIEW, and TestStand with NI PXI Platform

## CHALLENGE

Solution Sources has developed test systems for several customers with enterprise SSD offerings aimed at detecting manufacturing defects on NAND memory modules. Due to the typically high densities of the products, traditional ICT is not usually a viable solution.

## SOLUTION

- Use JTAG (either on JTAG FPGA in customers product, or on Solution Sources designed interface) to detect and isolate shorts on all address/data and control signals while all NAND Flash devices are disabled.
- Use JTAG to read mfg. and device ID in each die of each Flash device on UUT.
- Integrate JTAG into NI interface using LabVIEW, TestStand, and PXI

We have found indirect testing using JTAG (boundary scan) to be the most cost-effective and flexible approach. This “simple” methodology detects and isolates the vast majority of manufacturing defects.

Typically, a PCB supports a wide variety of different NAND Flash devices. Using “standalone” with JTAG tools (such as Corelis and Asset), this test approach required a separate test plan (along with time consuming re-generation of Flash ID tests for each “flavor” of flash used).

We have combined the JTAG tools with National Instruments LabVIEW/ TestStand to allow the customer to easily add tests for new NAND Flash devices by either entering known information for new devices (mfg. ID, device ID, number of die) or “learning” the configuration from a known good DUT). This has dramatically reduced development time, and allowed customers to add new devices “on-the-fly”.

## BENEFITS

Along with reductions in development time, the National Instruments environment has given our customers the ability to easily write configuration data and to track all test data in a SQL database. Additionally, at customer RMA sites, debug time was reduced from hours to minutes while only needing the aid of a technician as opposed to an electrical engineer.

As a result, manufacturing yields have improved, aggressive product cycles are able to be met by leveraging a standardized system and built in ‘learn’ features, and brand integrity is maintained by implementing a system that thoroughly tests the products.

## CASE STUDY

### CUSTOMER

Our customer provides reliable storage memory platforms that accelerate enterprise databases and applications while simultaneously reducing energy consumption and total cost of ownership.

### KEY PRODUCTS USED

- Proprietary Tools developed by Solution Sources Programming Inc.
- NI PXIe-1075, 18-Slot 3U PXI Express Chassis
- NI PXIe-8133 Core i7-820QM 1.73 GHz Controller
- NI PXIe-6341, X Series DAQ
- NI PXI-4110 Triple Output DC Power Supply
- Benchtop Boundary Scan Development System
- National Instruments (NI) TestStand
- NI LabVIEW

Solution Sources Programming is a global test and measurement provider specializing in designing and implementing turnkey test solutions tailored to customers’ needs throughout the product life cycle.

**For more information on how Solution Sources can help you, contact us at 408-487-0270 or visit us at [www.ssprog.com](http://www.ssprog.com).**