

PRODUCT
BRIEF

ScanWorks® FPGA-based Fast Programming

Key Benefits:

- IP provides signification reduction in programming time
- Utilizes an existing on-board FPGA as an Embedded Programmer
- Customizable IP and easy target FPGA selection using ETG
- FFP supports an array of FPGA's from Xilinx and Intel (Altera)

Key Product Features:

- Add-on feature to existing ScanWorks Test Development or Manufacturing Licenses
- Easy integration with ScanWorks API
- SVF for FPGA configuration with ScanWorks
- Adds another non-intrusive test technology to the ScanWorks Platform

Overview

ASSET's ScanWorks® FPGA-based Fast Programming (FFP) product performs fast programming of Serial Peripheral Interface (SPI), NOR/NAND flash, and Inter-Integrated Circuit (I2C) devices by use of customizable IP which it has inserted into an FPGA on the target board. The benefit of using customizable IP instead of programming these via the Boundary Scan chain is that it significantly decreases programming times. Examples of the benefits of utilizing ASSET's FFP solution are provided below (Figure 1).

FFP Customer Programming Examples						
Customer Industry	Access Method	Programmed Device	TCK	File Size	Program Time	Improvement
Defense	Boundary Scan Chain	SPI Flash	10 MHz	10 MB	3 hours	
	ASSET SPI Flash IP	SPI Flash	10 MHz	10 MB	25 sec.	432x
Communications	Boundary Scan Chain	SPI Flash	7 MHz	8 MB	> 3 hours*	
	ASSET SPI Flash IP	SPI Flash	7 MHz	8 MB	20 sec.	540x
Medical Systems	Boundary Scan Chain	Parallel Flash	20 MHz	54 MB	> 3 hours*	
	ASSET BST_IO IP	Parallel Flash	20 MHz	54 MB	5 min, 45 sec.	31X

* Customer Stopped BST Programming. Three hour completion time was used for improvement calculation.

Figure 1. FFP Customer Programming Examples

The FFP product includes the Embedded Tester Generator application, configuration and programming actions, device programming IP library, and FPGA model library. This combination makes development easy and seamless.

Embeddd Tester Generator

Target FPGA, IP selection, customization, and synthesis are all accomplished through the use of ScanWorks Embedded Tester Generator® (ETG) application (Figure 2). Once downloaded and installed, ETG must be linked into your

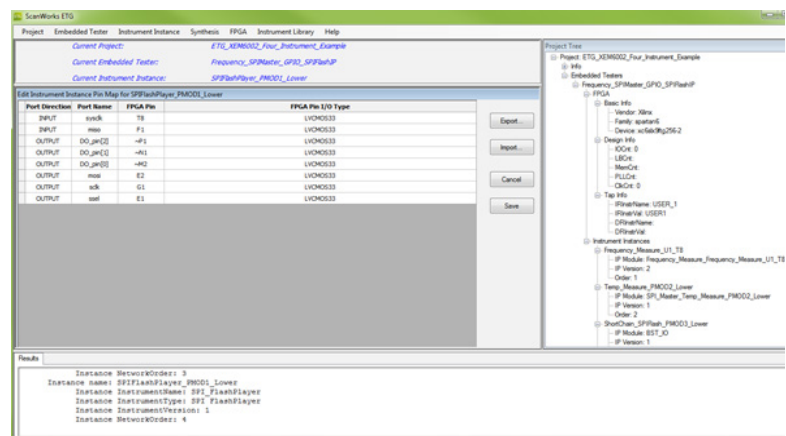


Figure 2: Embedded Tester Generator (ETG)

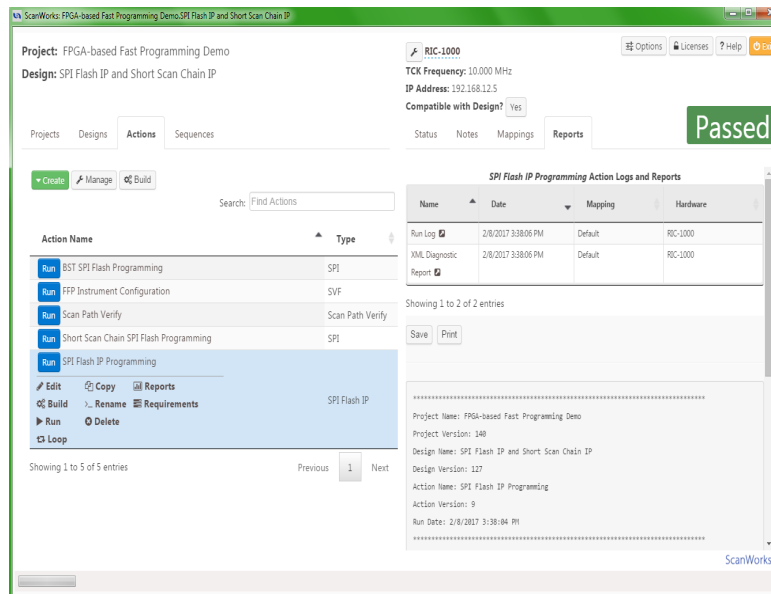


Figure 3. ScanWorks FPGA Configuration and Programming Action

company's existing synthesis tool environment. Target FPGA selection is performed by using a simple pick list of FPGA's based on families and part numbers. IP selection is also performed in a similar manner. Once the target FPGA and IP have been selected, customization based on pin connections between the target FPGA and the target device can be entered. Bit file synthesis is achieved with the push of button. Once synthesis is complete, a Serial Vector Format (SVF) file is created and used for IP insertion into the target FPGA via a ScanWorks SVF action. Once the IP

is inserted into the FPGA, a programming action can be created (Figure 3).

Available FFP IP Instruments

SPI Flash IP – The SPI Flash IP is an easy to use instrument providing at-speed programming of devices based on the Serial Peripheral Interface (SPI) Bus protocol in a board test FPGA environment. More detailed information on the SPI Flash IP is contained in the SPI Flash IP Fact Sheet.

BST_IO – The BST_IO IP is an easy to use instrument that reduces the size of the Boundary-Scan Register within an FPGA, thus shortening the overall board Scan Chain. The BST_IO IP is used to significantly reduce erase, programming, and verify times of NOR/NAND, SPI, and I2C memory as compared to the same operations using the FPGA's entire boundary register. More detailed information on the BST_IO IP is contained in the BST_IO Fact Sheet.

ScanWorks Platform for Embedded Instruments

ScanWorks Platform for Embedded Instruments is a seamless software environment to access, run and collect data from any instrument in your chips, circuit boards or systems. The ScanWorks Platform includes products for Boundary-Scan Test (BST), Processor-Controlled Test (PCT), FPGA-based Fast Programming (FFP), FPGA-Controlled Test (FCT) and IJTAG test.

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