T13/20 Multi_Image Internal Reconfig

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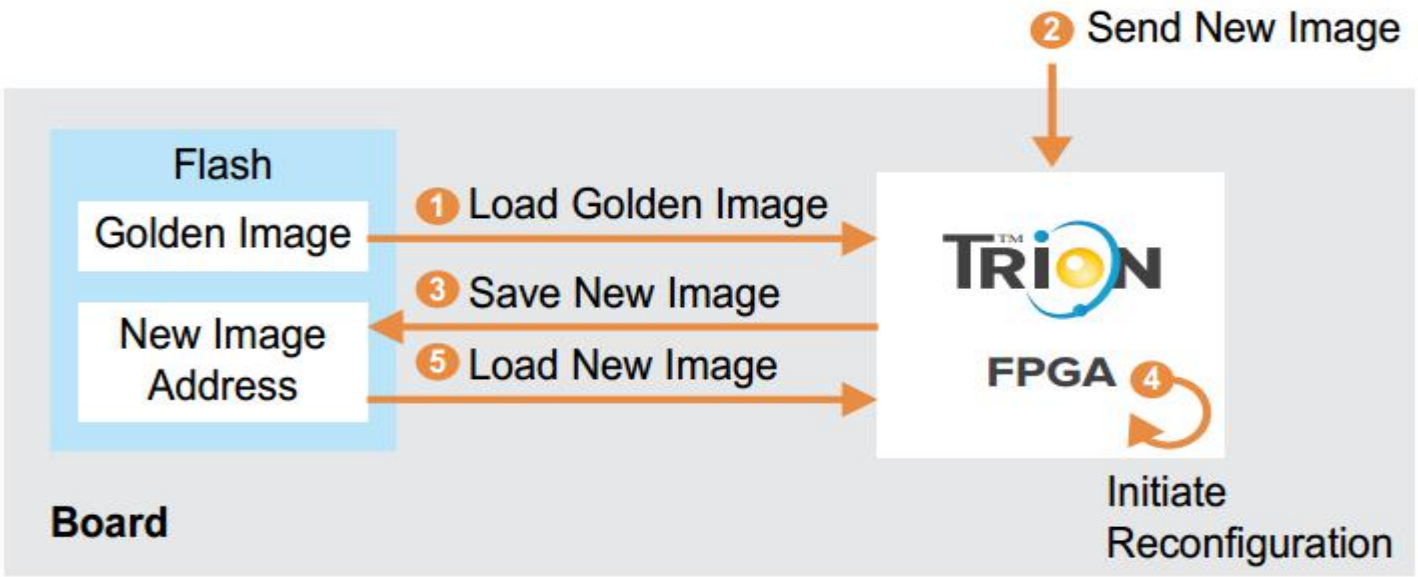
Introduction

Trion™ T13/T20 FPGAs have built-in hardware that supports an internal reconfiguration feature in which the FPGA can reconfigure itself from a bitstream image stored in flash memory.

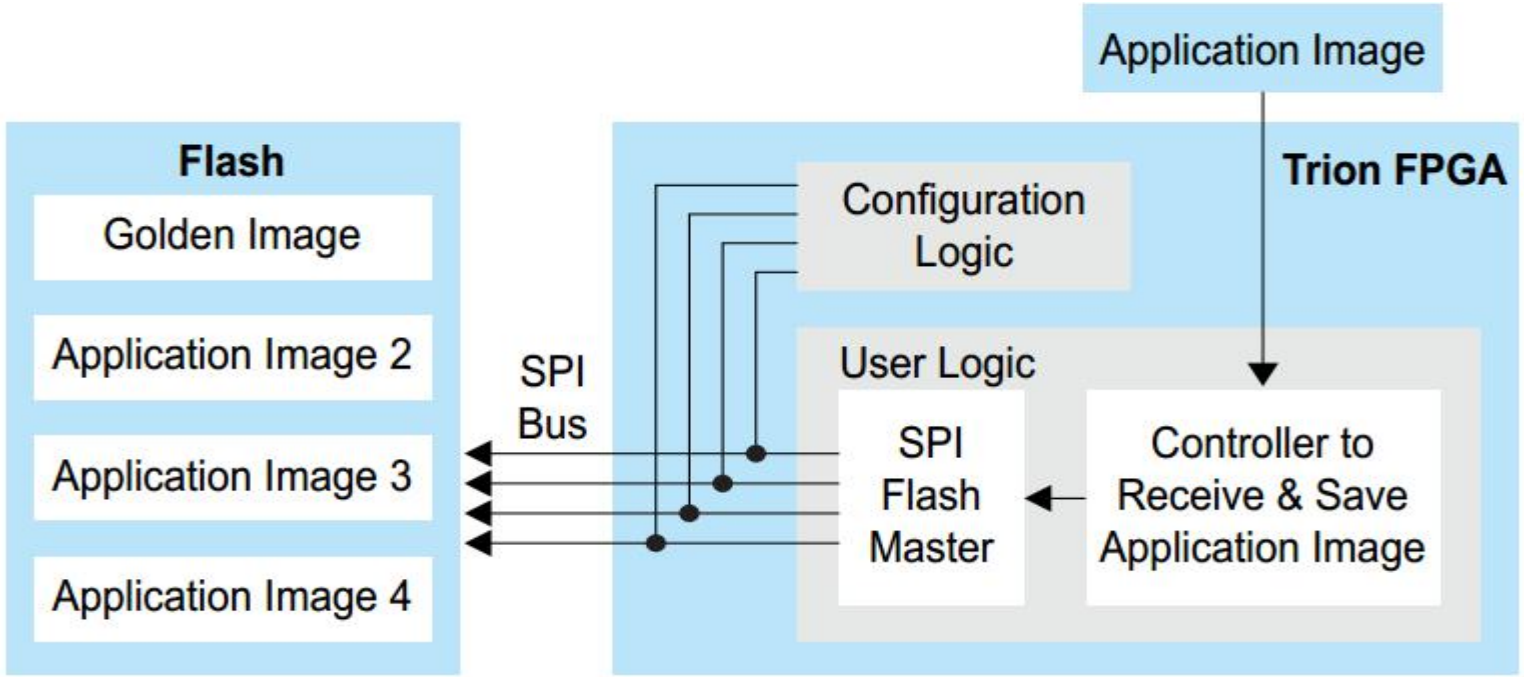
The FPGA first configures itself using a "golden" bitstream image as usual. Then, the FPGA receives a new application image remotely, via Ethernet, Wi-Fi, etc., and saves it to flash memory. Then, the FPGA triggers itself to reconfigure using the new image.



How to bulid the Golden design

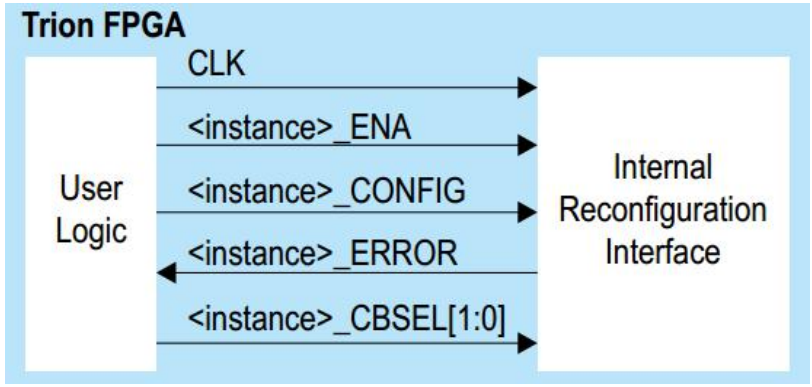
In addition to user logic, the golden design should:

- Enable the reconfiguration interface in the Efinity® Interface Designer
- Include a trigger to initiate reconfiguration
- Use active configuration mode
- Receive and save a new application image to the flash memory



Internal reconfiguration interface

The internal reconfiguration interface uses four control signals and a signal that selects the location of the new image.

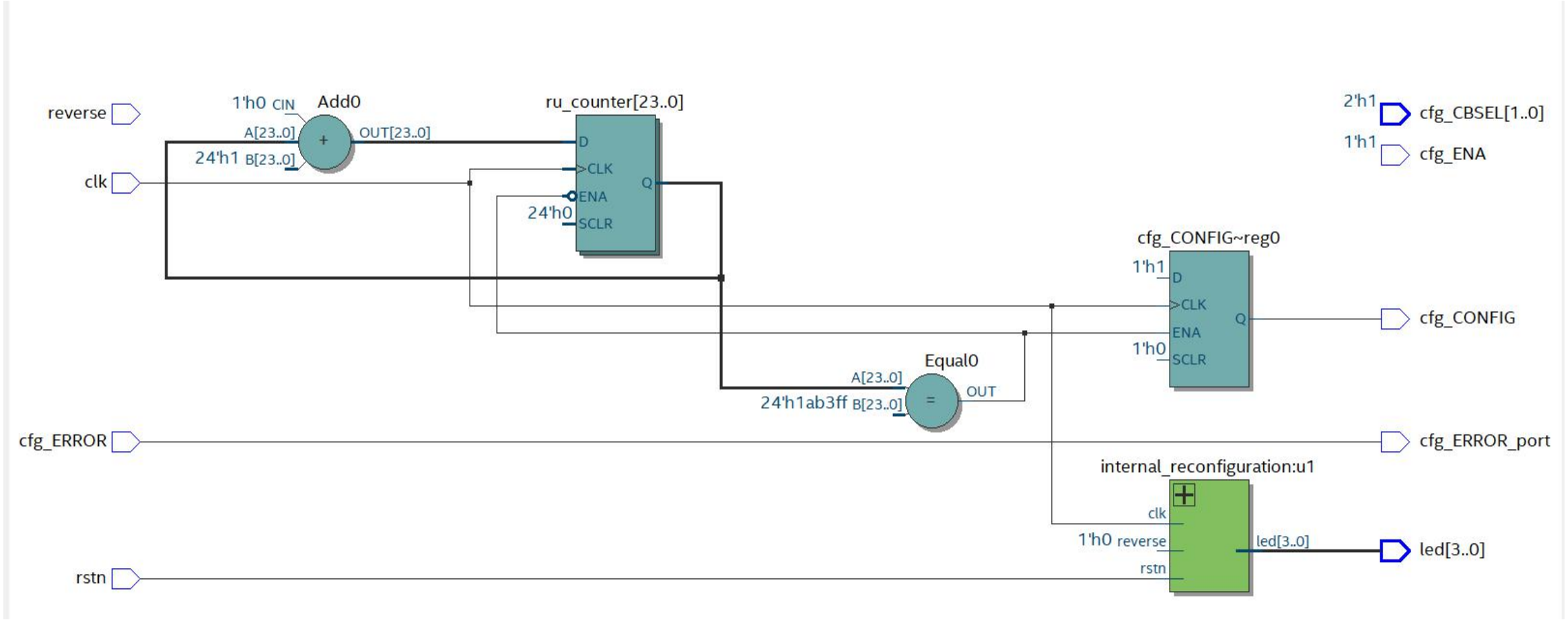


The description of internal reconfiguration signals is as follows:

Signal	Direction	Description
<*instance*>_CBSEL[1:0]	Input	Multi-image select signals to the internal reconfiguration interface (not package pins). Use these signals to choose which image to load from flash memory.
CLK	Input	Clock used to latch <*instance*>_CBSEL when ENA is high.
<*instance*>_CONFIG	Input	Asynchronous control that initiates reconfiguration.
<*instance*>_ENA	Input	When <instance>_ENA is high, read the value of <instance>_CBSEL.
<*instance*>_ERROR	Output	Status signal. 0 if reconfiguration is successful. 1 if the reconfiguration failed.(1)

How to run in Trion T20 BGA256 Development Kit

1.Golden design



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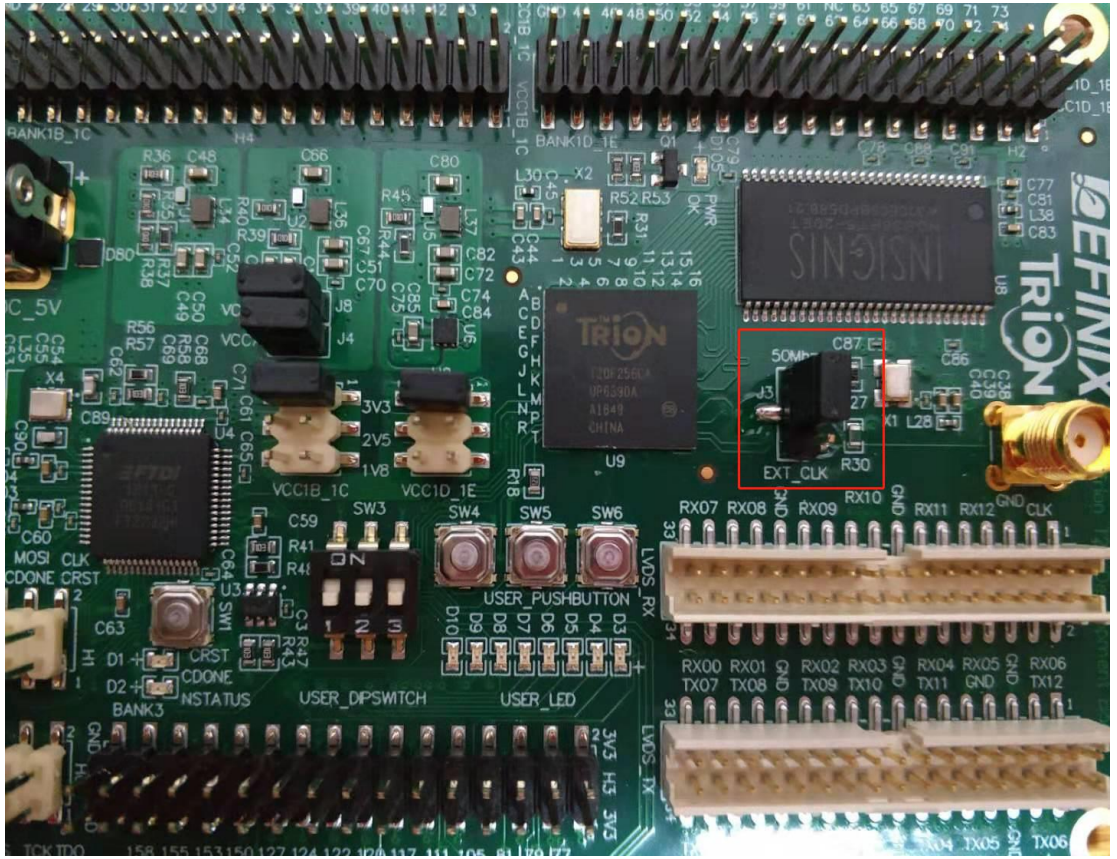
Connecting J3 pins 1 and 2



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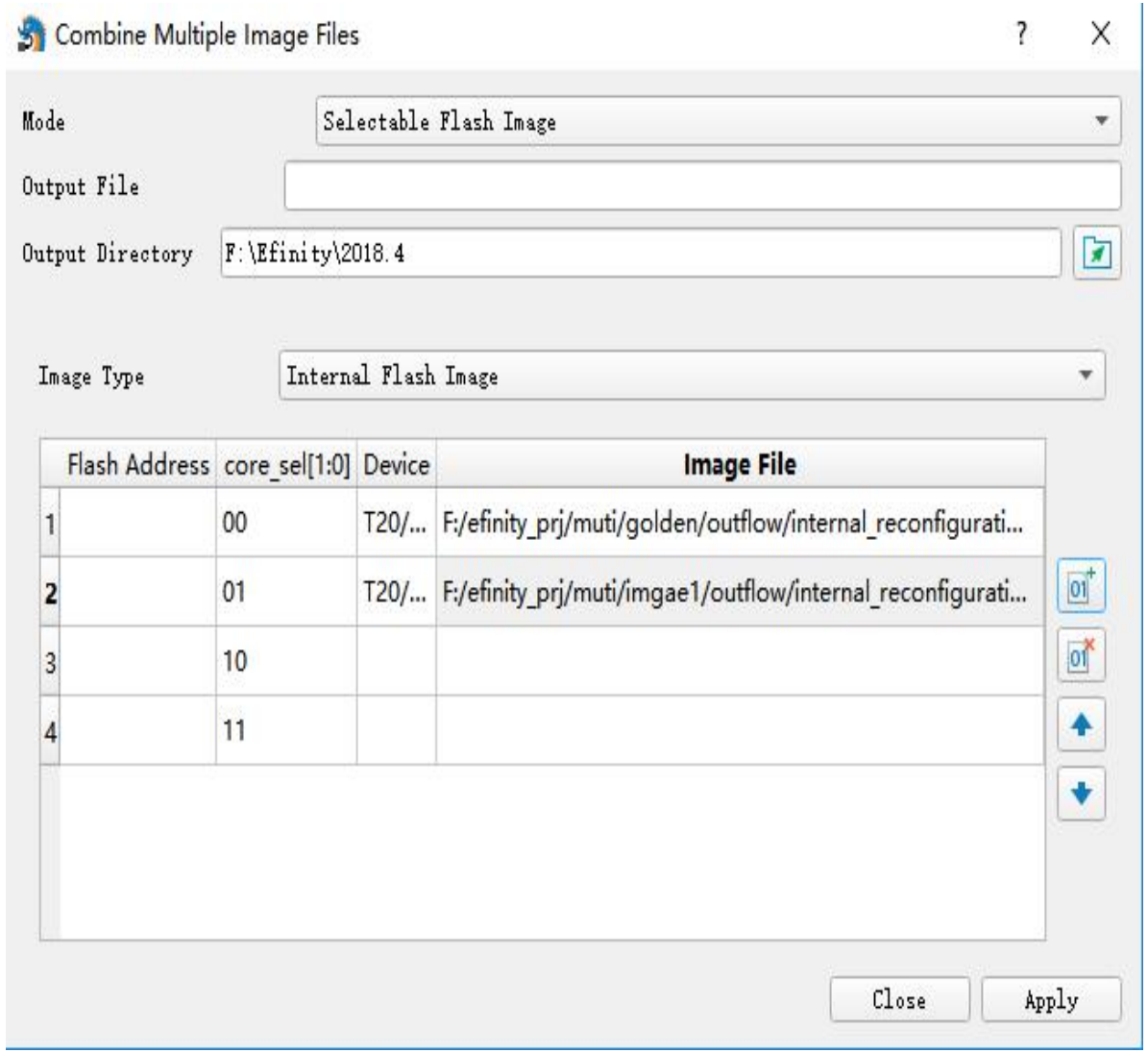
3.Create image

1) Click the **Combine Multiple Images** button.
2) Choose **Selectable Flash Image** as the Mode.
3) Enter the output file name.
4) Choose the output file location.
5) Choose **Internal Flash Image**.
6) Choose Golden Image **in 00**.
7) Choose Other Image **in 01**.



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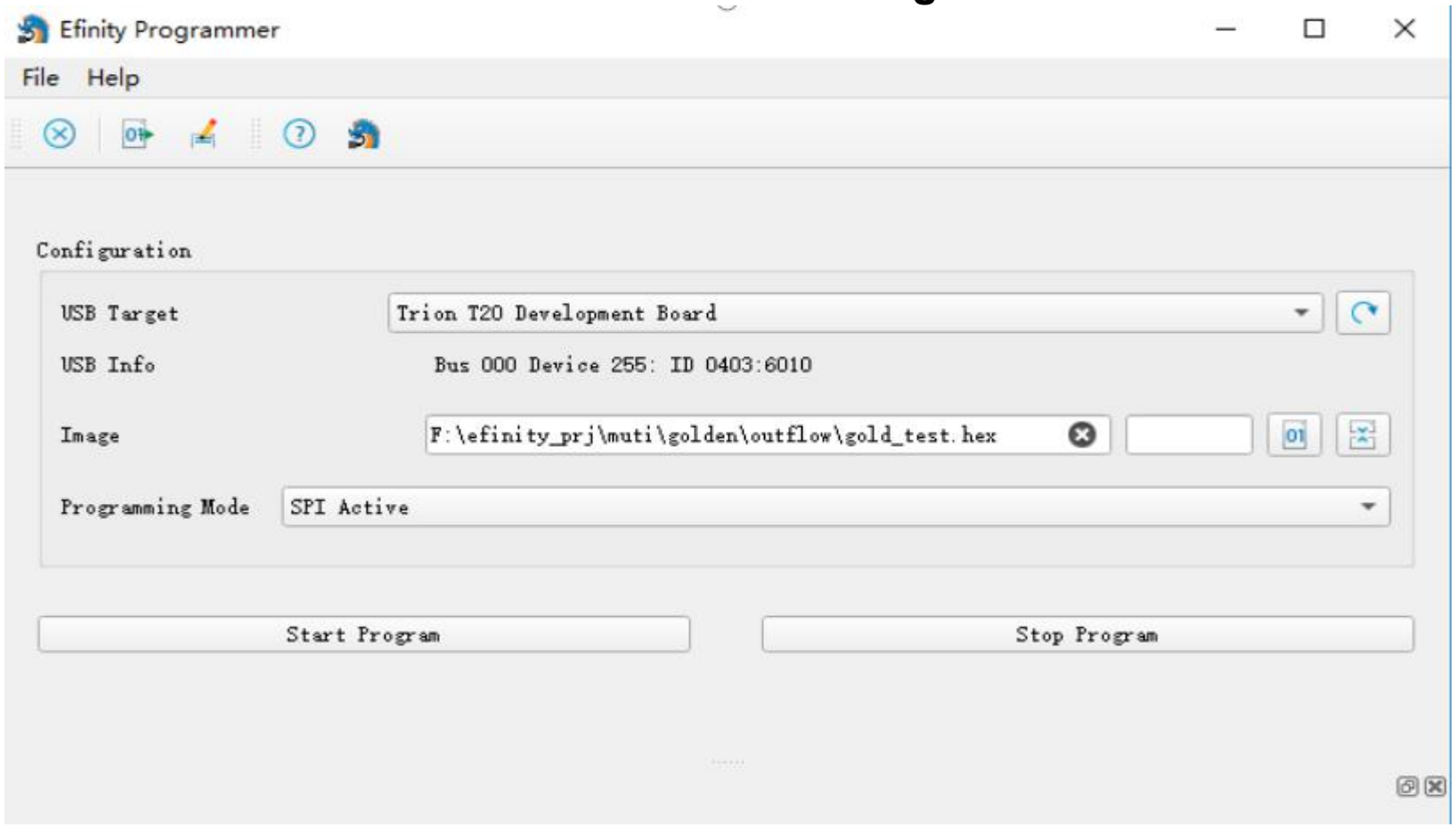
4.Program Image

Choose **SPI Active** and then Click the **Start Progarm** button.



References

1. Using the Internal Reconfiguration Feature in T20 FPGAs
2. Trion T20 BGA256 Development Kit Overview
3. AN 010: Using the Internal Reconfiguration Feature to Remotely Update Trion FPGAs
4. Efinity Software User Guide

THANK YOU!