

# SPI Direct In-System Programming (ISP))



Direct SPI configuration is supported only up to Xilinx iMPACT version 11.x. See [Xilinx AR#36156](#). Available only for TE0300 (through J3 SPI interface) and TE0320 (through [B2B connection](#)).



For further information about direct (pure SPI) in-system programming of SPI Flash memories, please see [Xilinx Application Note XAPP951 "Configuring Xilinx FPGAs with SPI Serial Flash"](#).

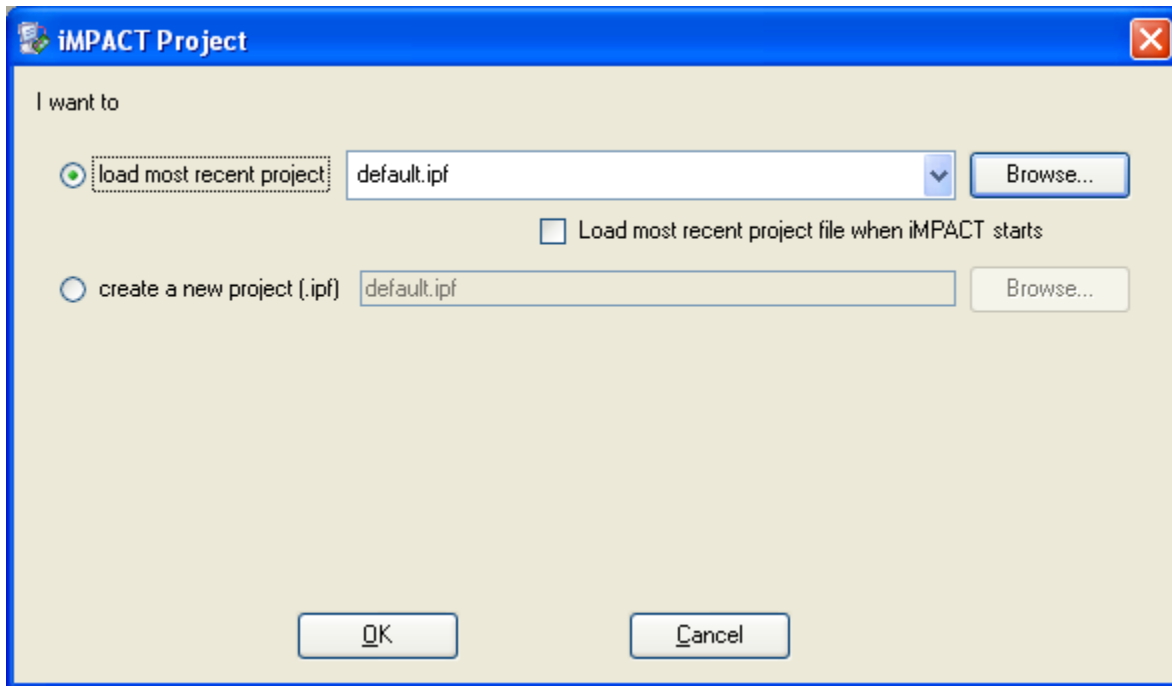
You must follow the procedure below.

Make sure that reset switch is enabled:

- S2 is switched to "Reset" (OFF) during programming (TE0300 module);
- S1D is switched to "Reset" (ON) during programming (TE0320 module).

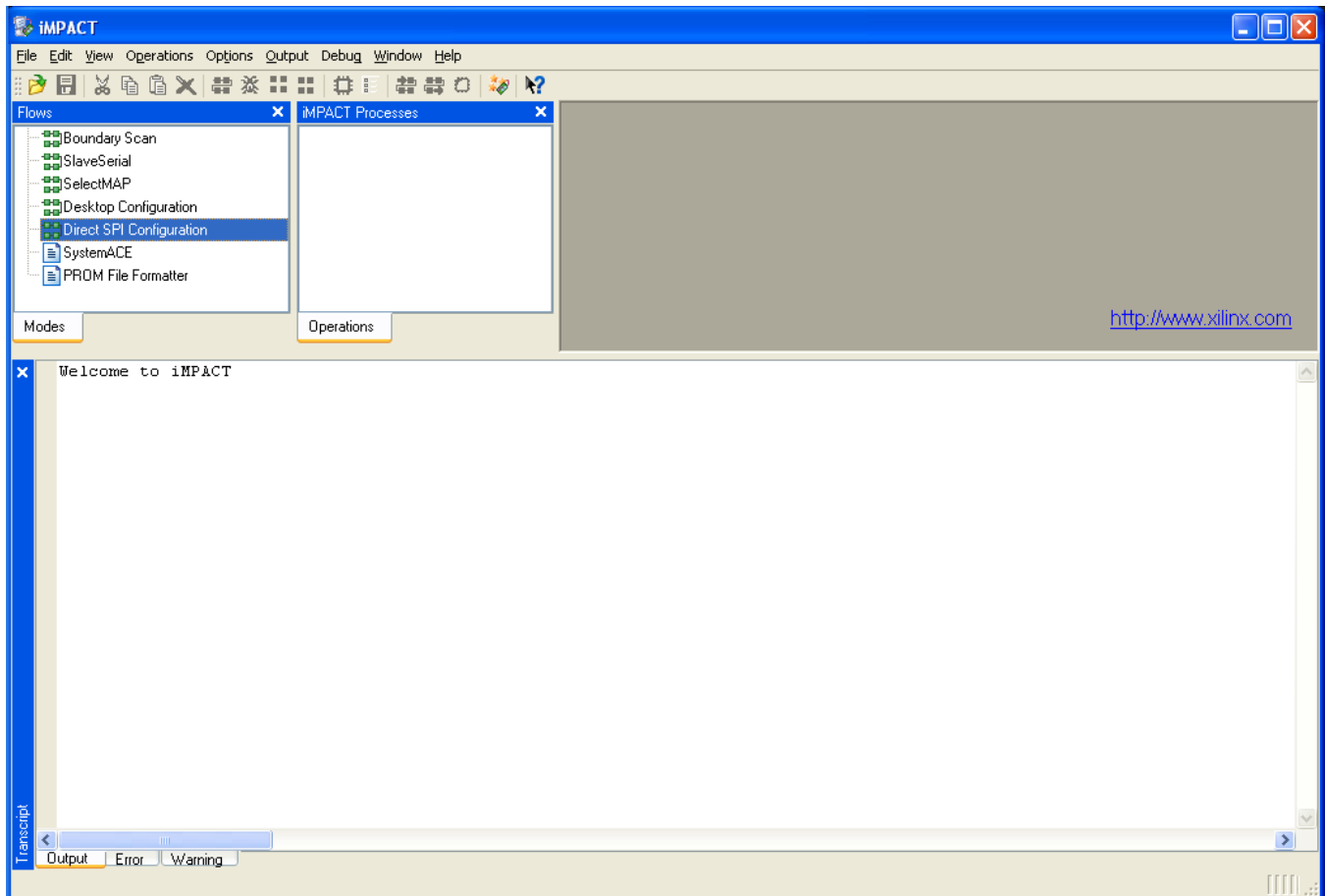
Connect the host computer to the micromodule through both the SPI flying leads cable and the USB cable.

Start Xilinx ISE iMPACT. The following example shows the case of iMPACT 9.2. If the "iMPACT Project" window pops up, press the "Cancel" button.



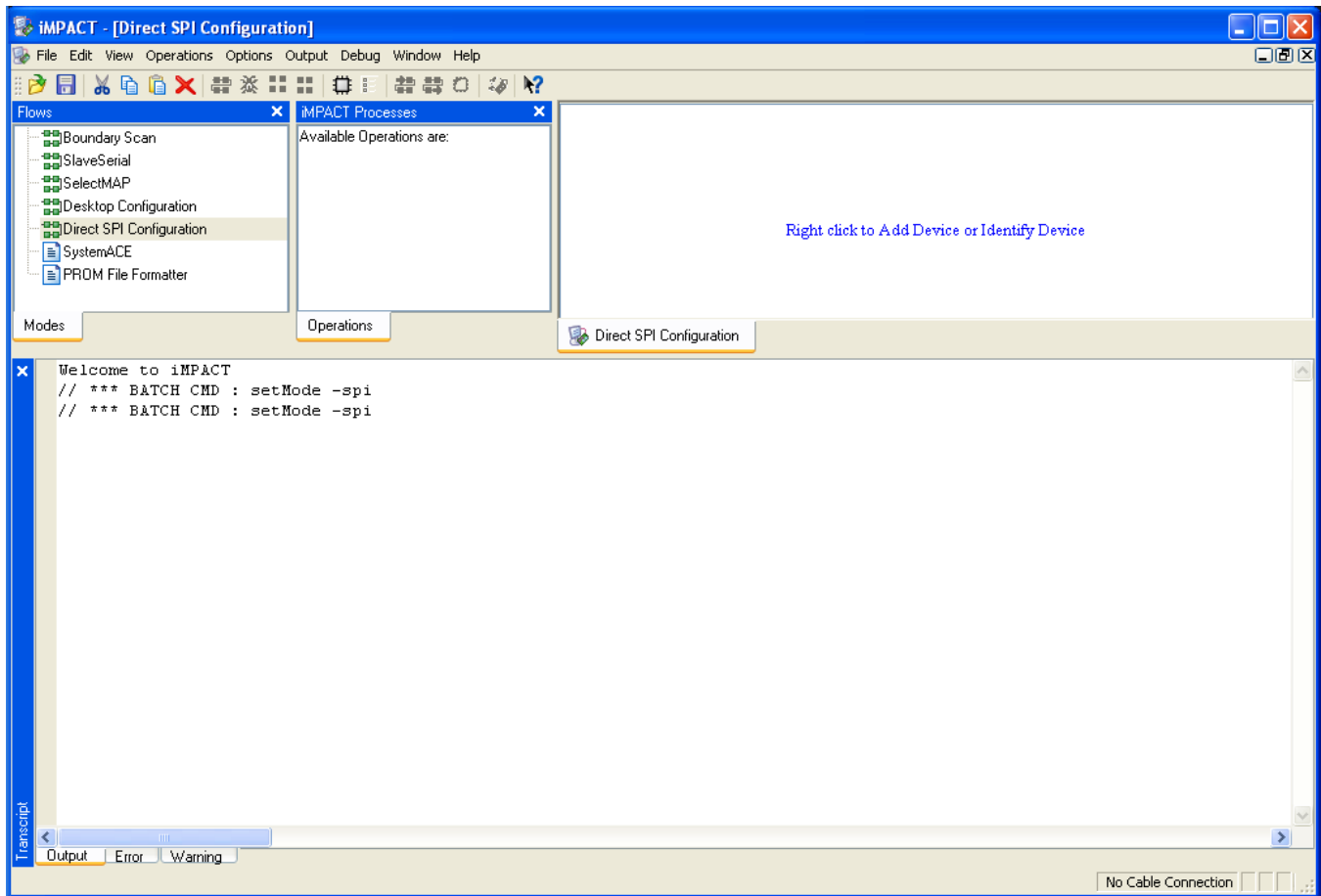
"iMPACT Project" window pops up

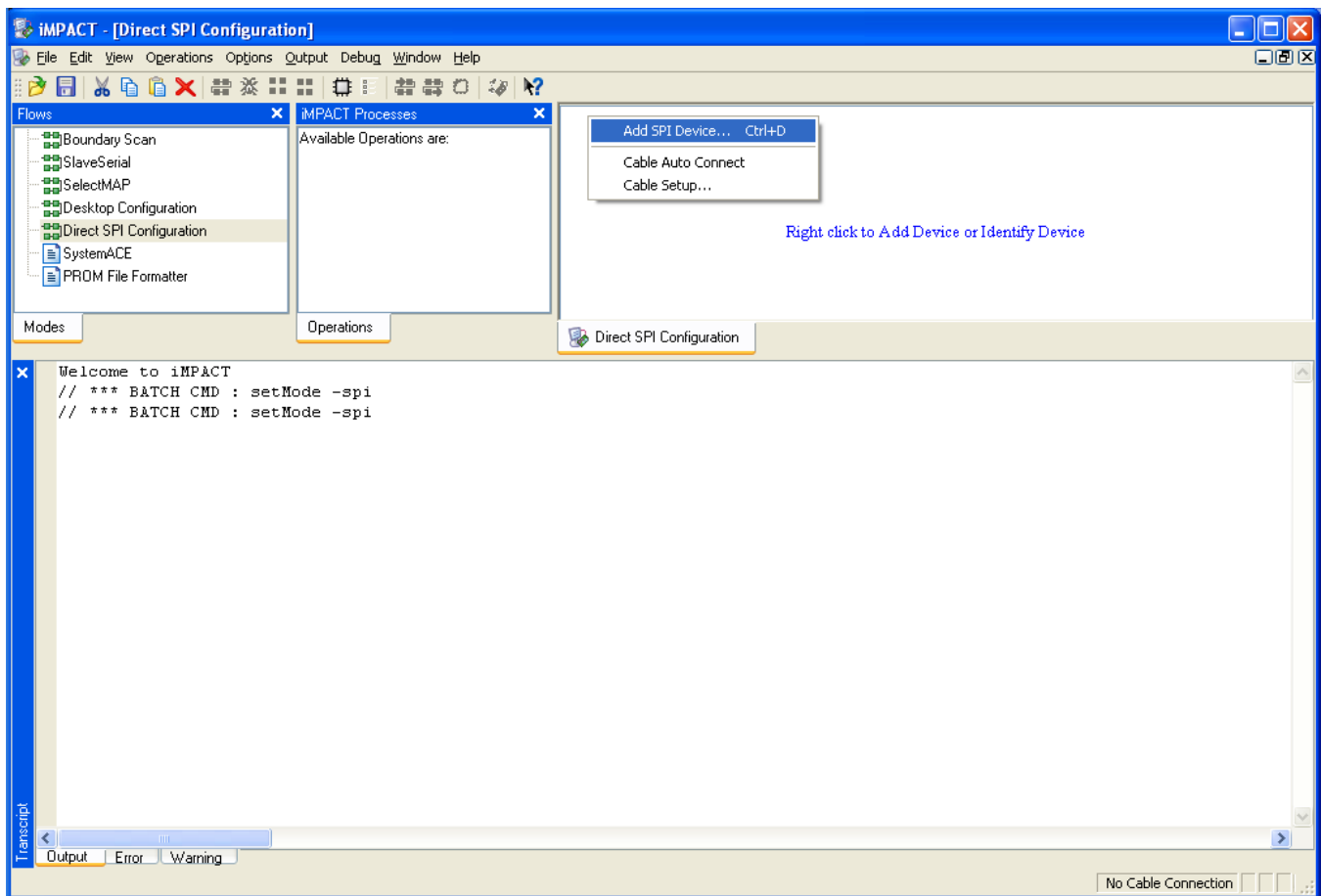
Double click the "Direct SPI Configuration" option in the "Modes" panel.



**"Direct SPI Configuration" option in the "Modes" panel.**

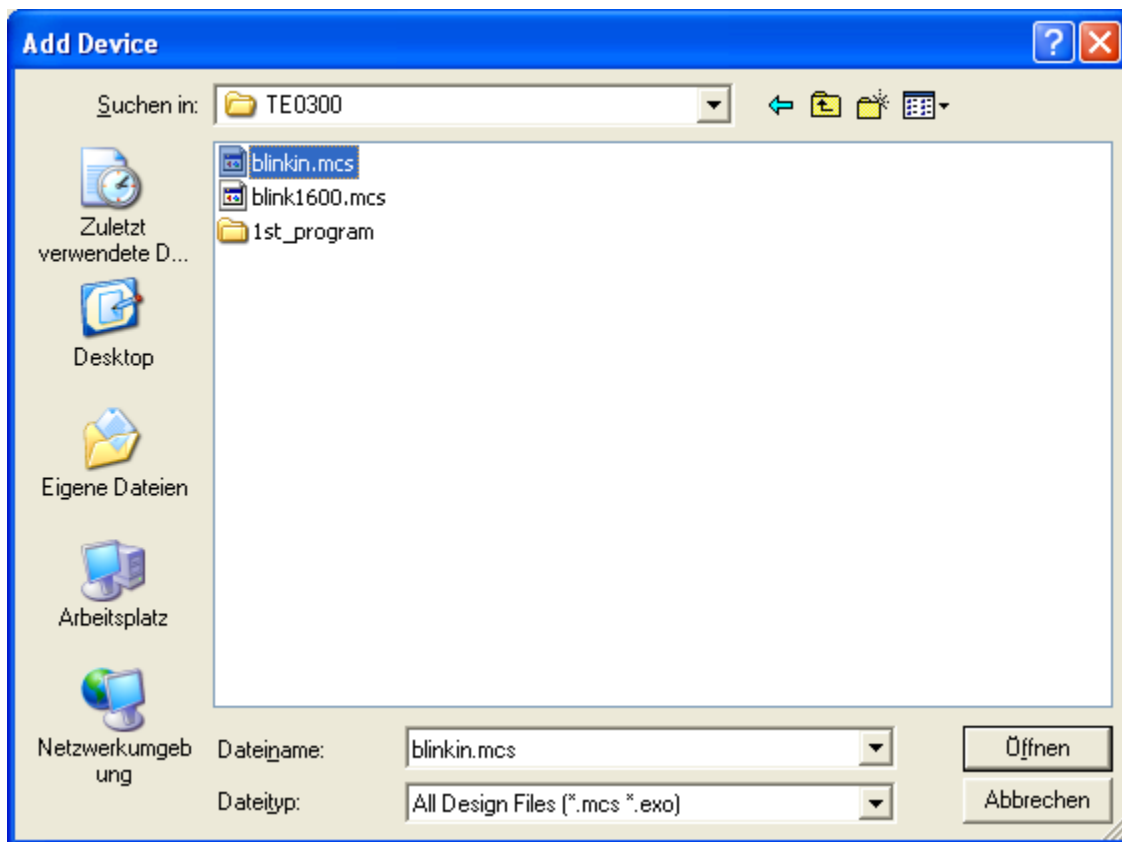
Right click the "Direct SPI Configuration" panel to add a device and select "Add SPI Device".





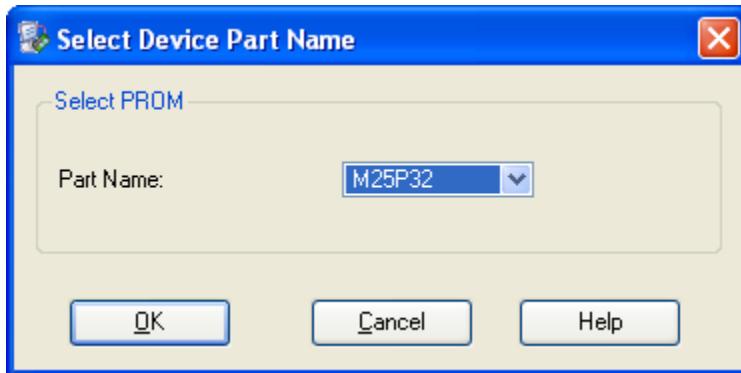
Right click the "Direct SPI Configuration" panel to add a device and select "Add SPI Device"

You can now select the file corresponding to your device. In the following example, we will show how to select the micromodule reference device "blinking.mcs" in the "TE0300" folder.



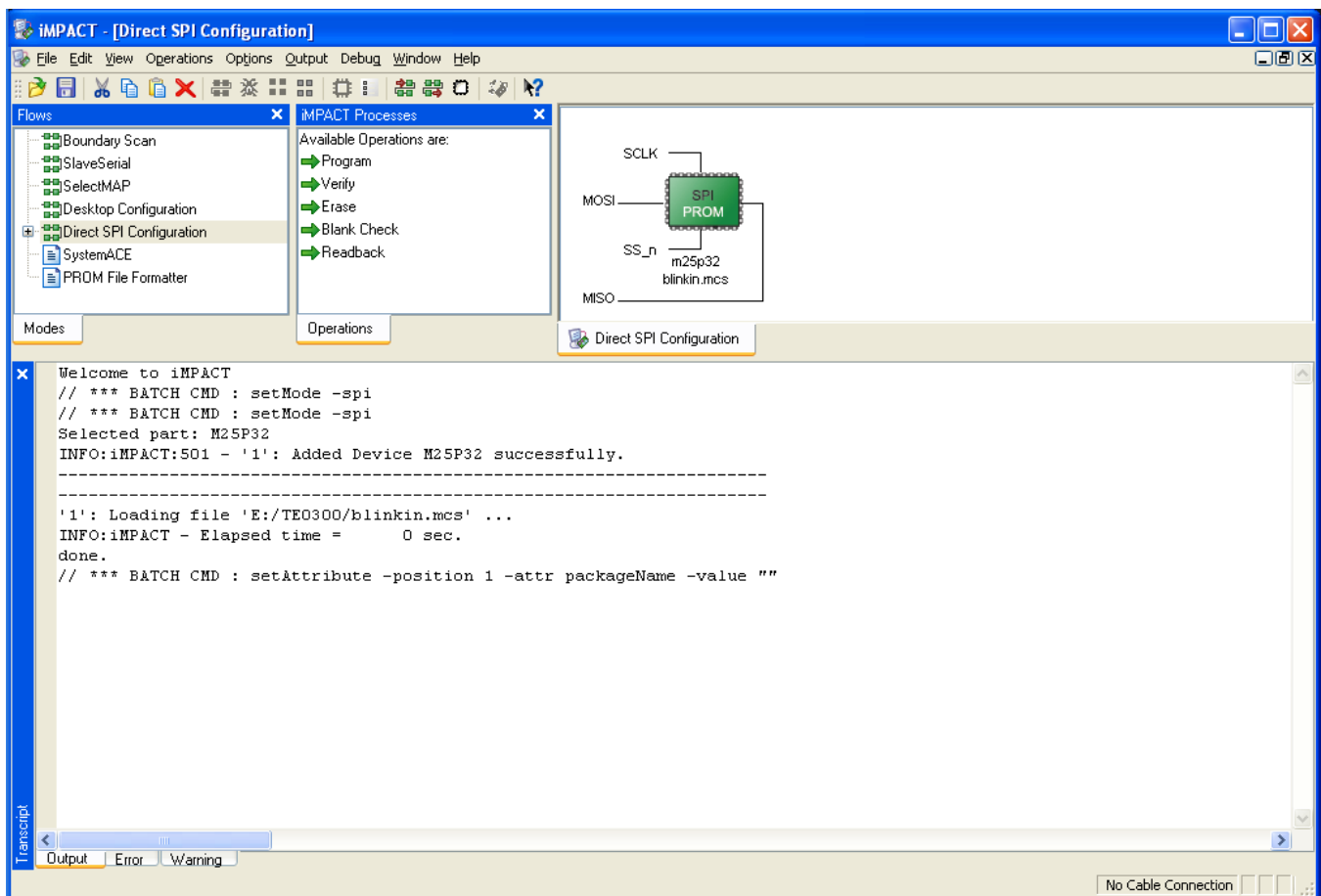
select the micromodule reference device "blinking.mcs" in the "TE0300" folder

Select the part name corresponding to the SPI flash present on the module (STMicroelectronics M25P32, a 32 Mbit (4M x 8) Serial Flash memory).



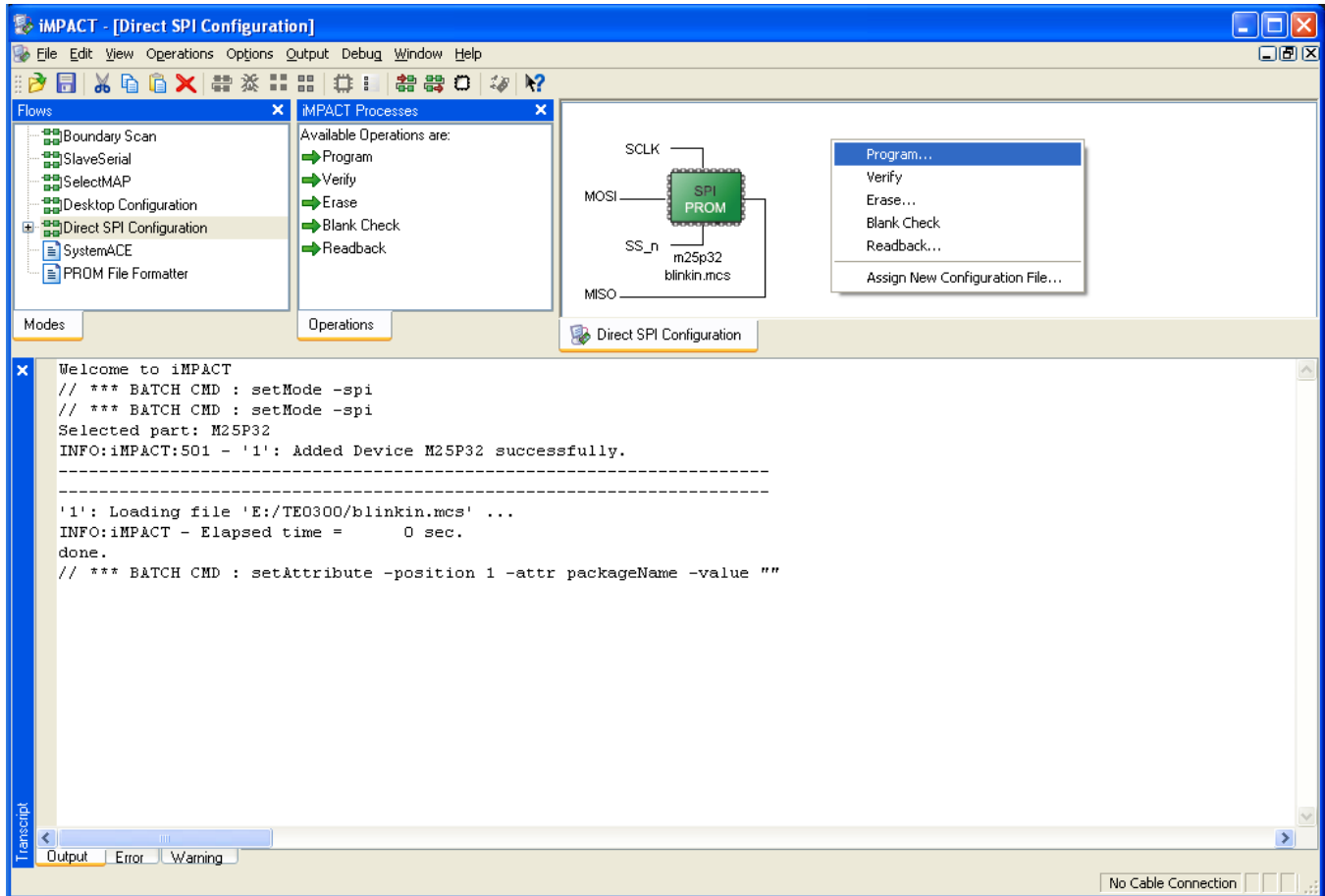
Select the part name corresponding to the SPI flash present on the module

iMPACT should now look like this.



iMPACT Direct SPI Configuration

Right click the SPI PROM device and select the "Program" operation.



Select the "Program" operation

In the "Programming Properties" window, just leave the default settings and press the "OK" button.

Programming Properties

Category

Programming Properties

Advanced PROM Programming Properties

Revision Properties

Programming Properties

General Programming Properties

☒ Verify

General CPLD And PROM Properties

☒ Erase Before Programming

☐ Read Protect

☐ PROM/CoolRunner-II Usercode (8 Hex Digits)

CPLD Specific Properties

☐ Write Protect

☐ Functional Test

☐ On-The-Fly Program

☐ XPLA UES Enter up to 13 characters

PROM Specific Properties

☐ Load FPGA

☐ Parallel Mode

☐ Use D4 for CF

Spartan3AN Programming Properties

☐ Data Protect

☐ Data Lockdown

FPGA Device Specific Programming Properties

☐ Pulse PROG

☐ Program Key

☐ Assert Cable INIT during programming

OK

Cancel

Apply

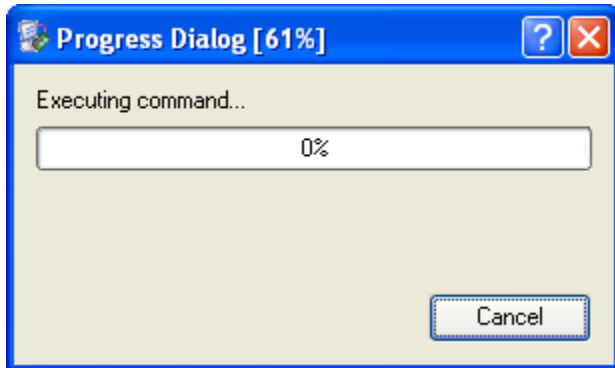
Help





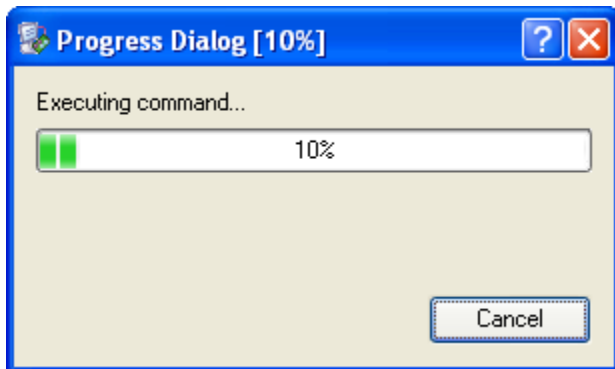
### "Programming Properties" window

iMPACT will first erase the SPI Flash memory (notice the mismatch between the two progress indicators)



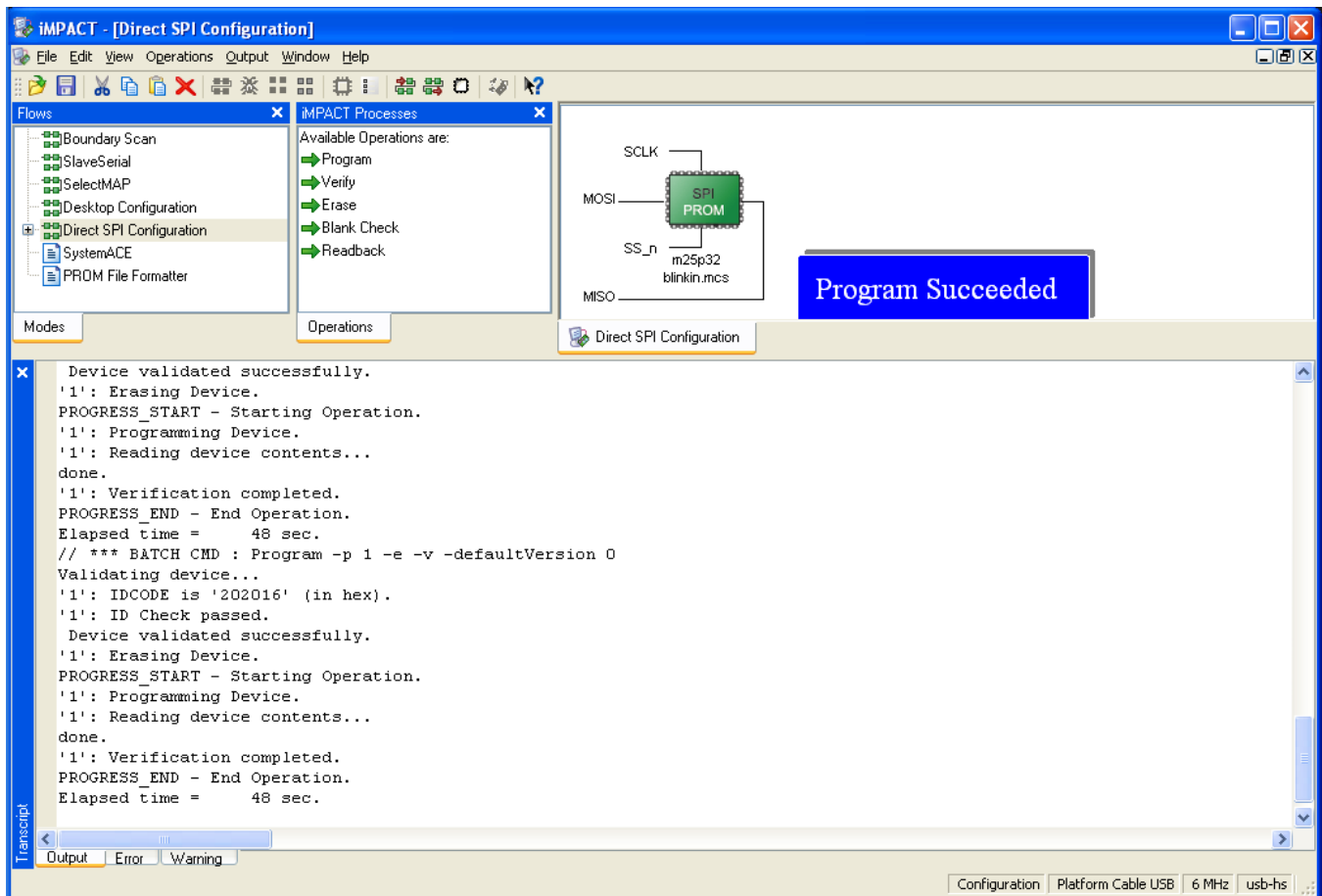
### Erase the SPI Flash memory

and then write the bitsream in the SPI Flash Memory (notice the match between the two progress indicators).



### Write the bitsream in the SPI Flash Memory

After successful programming, you should read the message "Program Succeeded" popping up for a few seconds in the "Direct SPI Configuration" panel.



**"Program Succeeded"**

Move Master Reset switch back to the "Run" position. Make sure that reset switch is disabled:

- S2 is switched to "Run" (ON) after programming (TE0300 module);

- S1D is switched to "Rin" (OFF) after programming (TE0320 module).

In case you uploaded the test design, you should see the on-board led blinking at 0.5 Hz.