JTAG DirectC and SPI DirectC v2021.2 Release Notes

Introduction

DirectC v2021.2 is the new general release of the JTAG-DirectC and SPI-DirectC solutions that include the DirectC source files and sample projects. JTAG-DirectC and SPI-DirectC can be used by making minor modifications to the source code, adding the necessary Application Programming Interface (API), and compiling the source code and the API together to create a binary executable. The binary executable is downloaded to the system along with the programming data file. JTAG-DirectC and SPI-DirectC use DAT files as the programming data file.

Note: Microchip has introduced a new version numbering schema for DirectC solutions. The DirectC releases are now categorized by two numeric segments that indicate the release information. The first numeral coincides with the year of the software release and the second numeral is the release version. DirectC v2021.2 is the second release with this format. There is no change in the design flow between DirectC vx.x and DirectC v202x.x release.

System Requirements

DirectC solution is designed to be used in an embedded environment with the following minimum system requirements:

- Single core processor
- SPI or JTAG interface to the target device
- 8192 bytes of RAM
- 64 kilobytes of code space
- Data file access

Download DirectC Software

Download Windows Installer
DirectC installer v2021.2 contains the source, sample projects, and Libero design files for both JTAG-DirectC and SPI-DirectC solutions. In addition, Windows based UARTHostLoader application used to interact with the IAR sample projects is also included in this installer.

You can download the installer using the following link.

DirectC v2021.2 Installer (Windows)

Download Source Files
You can download the JTAG-DirectC v2021.2 and SPI-DirectC v2021.2 source files using the following links.

- JTAG-DirectC v2021.2 Source Files (Windows)
- SPI-DirectC v2021.2 Source Files (Windows)

For more information on working with the DirectC solutions, see the JTAG DirectC User Guide and SPI DirectC User Guide.

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1.   DirectC Release Notes

These release notes contain important information about DirectC solutions.

1.1   New Device Support

None

1.2   New Features and Enhancements

The JTAG and SPI DirectC v2021.2 provides the following new features and enhancements.

1.2.1   DirectC v2021.2

This topic describes the software features and enhancements in JTAG and SPI DirectC.

JTAG-DirectC

- Added `reprogram_inflight` action support for RTG4™ and RTPolarFire® family of devices.

SPI-DirectC

- Added `reprogram_inflight` action support for RTPolarFire family of devices.
- Updated `DEVICE_INFO` and `READ_IDCODE` to read device certificate and report family and device.
- Added support to disable system controller suspend mode for PolarFire® family of devices and its derivatives.

1.2.2   DirectC v2021.1

This topic describes the software features and enhancements in JTAG and SPI DirectC.

JTAG-DirectC

- Added EXTEST2 instruction DirectC code to resolve I/O issues.
- Added firmware revision information when IDCODE is displayed.
- Updated to read debug information data in Flash pro log.
- Added component digest in the Component header.
- Updated to log digest values in the programming and serialization logs.
- Updated `DEVICE_INFO` and `READ_IDCODE` to read device certificate and report family and device.
- Updated `VERIFY_DIGEST` to dump the newly calculated digests.
- **PolarFire® SoC:**
-    – Added JTAG DirectC support.
- **PolarFire:**
  - Updated to maintain last known state of IOs during programming should be data driven.
  - Updated error codes and messages.
  - Provided support for JTAG reading of data-integrity bits.
  - Added `read_device_certificate` action support.
  - Added support for zeroization.
- **SmartFusion®2, IGLOO®2, and RTG4™:**
  - Updated to maintain last known state of IOs during programming should be data driven.
  - Updated error codes and messages.
  - Added `read_device_certificate` action support.

SPI-DirectC

- Added firmware revision information when IDCODE is displayed.

- Read Debug Info data in Flash pro log.
- Updated error codes and messages.
- Updated log message and exit codes.
- Added component digest in the component header.
- Updated to log digest values in the programming and serialization logs.
- Updated `DEVICE_INFO` and `READ_IDCODE` to read device certificate and report family and device.
- Added capability to read the digest.
- Updated `VERIFY_DIGEST` to dump the newly calculated digests.
- **PolarFire SoC:**
  - Added SPI DirectC support.
- **PolarFire:**
  - Added `read_device_certificate` action support.
  - Added support for zeroization.
  - Provided support for JTAG reading of data-integrity bits.
- **SmartFusion2, IGLOO2, and RTG4:**
  - Added `read_device_certificate` action support.

1.3   Known Issues and Limitations

1.3.1   HWSTATUS Instruction

HWSTATUS instruction is used to ensure the device SPI internal buffers are ready to transmit data. This instruction is one byte in length and requires reading the data shifted out from the device while the instruction is being shifted into the device. The sample project file bare metal SPI driver has been modified to handle this case.
Note: The driver files generated by Libero software do not support this use case.

For more information on the the changes required to support this transaction, see the `MSS_SPI_transfer_block` function in the `mss_spi.c` file available in the sample project.

2.　Revision History

Revision	Date	Description
B	01/2022	• Removed support for PolarFire SoC family of devices. • Added 1.2.1. DirectC v2021.2.
A	09/2021	Initial revision.

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