PURPOSE

In PSoC4, the PSoC Creator Bootloader and Bootloadable Components support dual application images for high-reliability applications. The build process for a dual-application bootloader is similar with single applications, but there are a few differences. In this memo, I list the differences and clarify how to combine Dual-application Bootloadable Hex Files for Production Programming.

DETAILS

Test Hardware: CY8CKIT-042

Test Software: PSoC Creator 4.2 (4.2.0.641)

1: It is important to remember that with PSoC Creator, bootloaders and applications are implemented in completely separate projects. Available project types are: Standard (or "normal," no bootloader), Bootloader, and Bootloadable. A fourth project type, Dual-App Bootloader, supports dual application images for high-reliability applications. PSoC has no bootload ROM, the bootloader is placed in flash, as Figure 1 shows. A bootloader project is placed in flash starting at address zero.

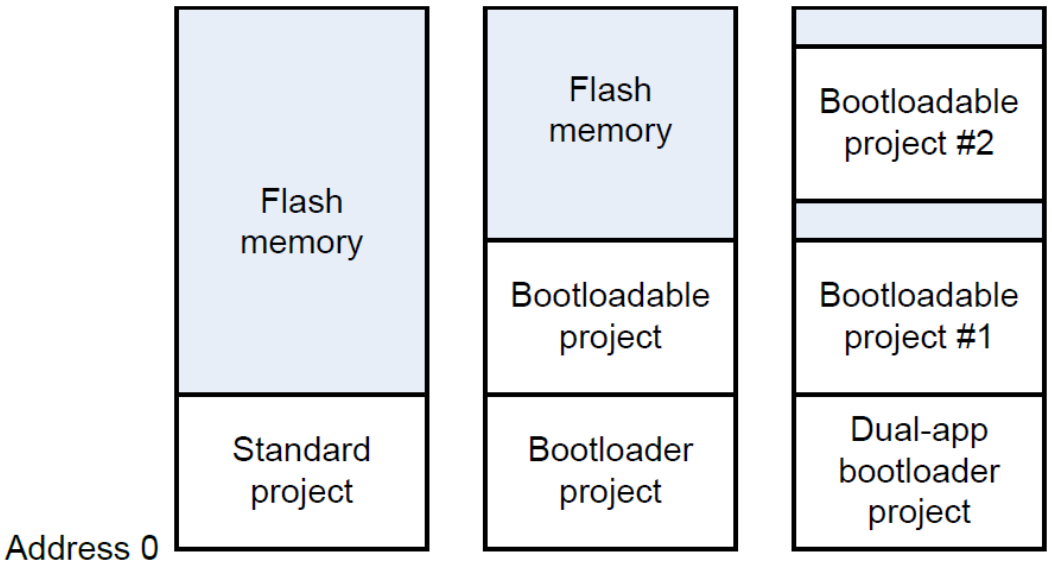


Figure 1. PSoC Creator Projects and Flash Memory Usage

2: If users want to use Dual-App Bootloader, in the Bootloader Component configuration dialog, check the box Dual-application bootloader, as Figure 2 shows.

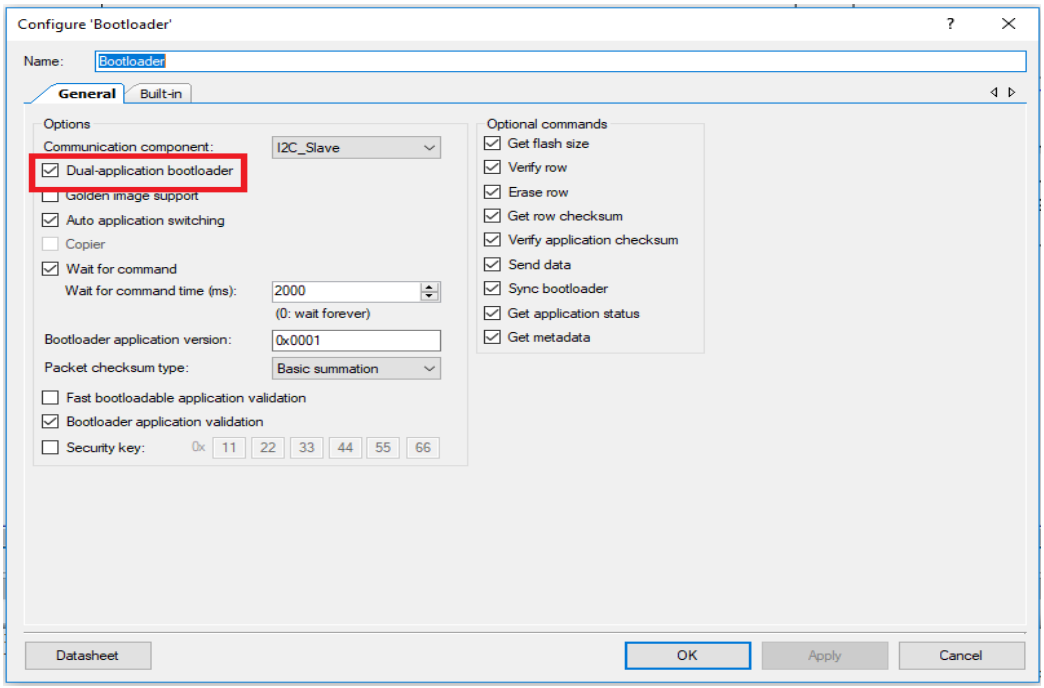


Figure 2 Bootloader Component Configuration

3: After the bootloader is created, users can define as many bootloadable applications as want. The bootloadable application project must be associated with bootloader project, as figure3 shows.

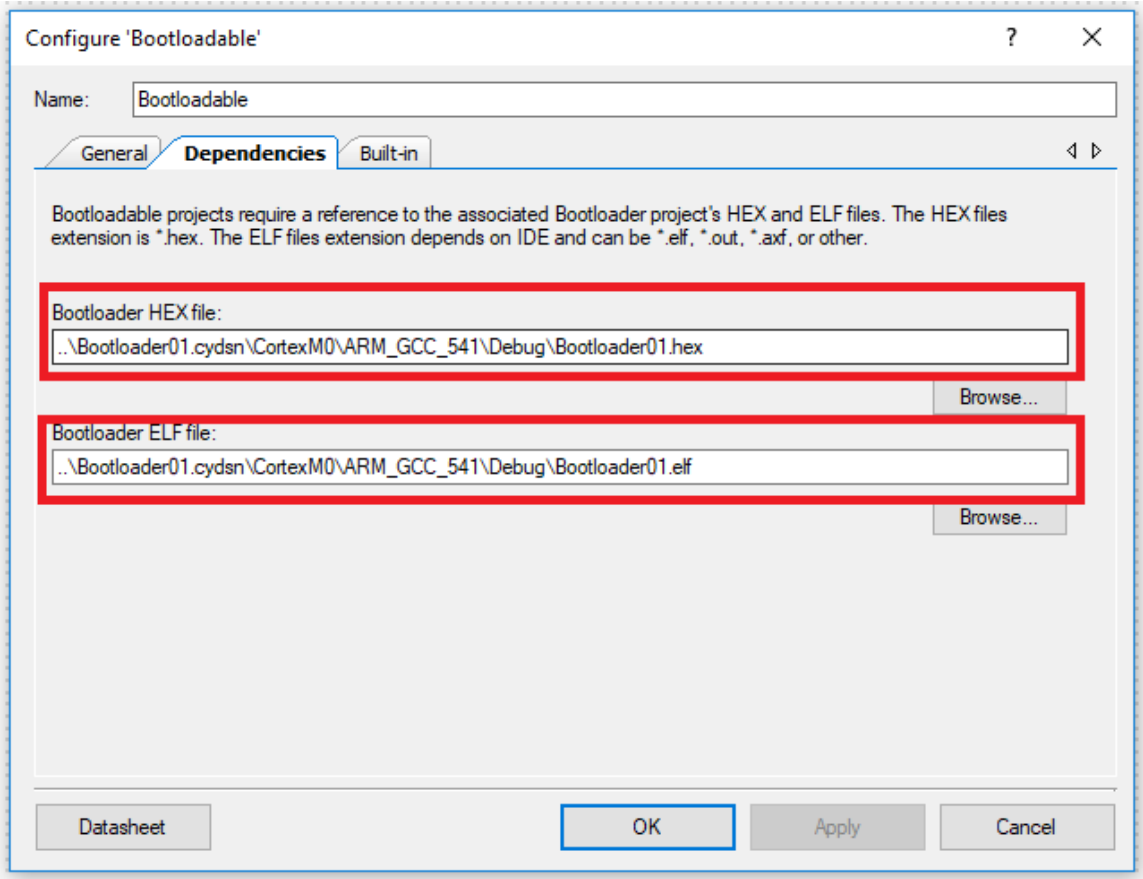


Figure3. Bootloadable/Bootloader Projects Link

4:When users build all the projects in the workspace, A dual-application bootloadable project has five output files.
These files allow placement of the bootloadable project as either application 1 or application 2, as Figure 4 shows.

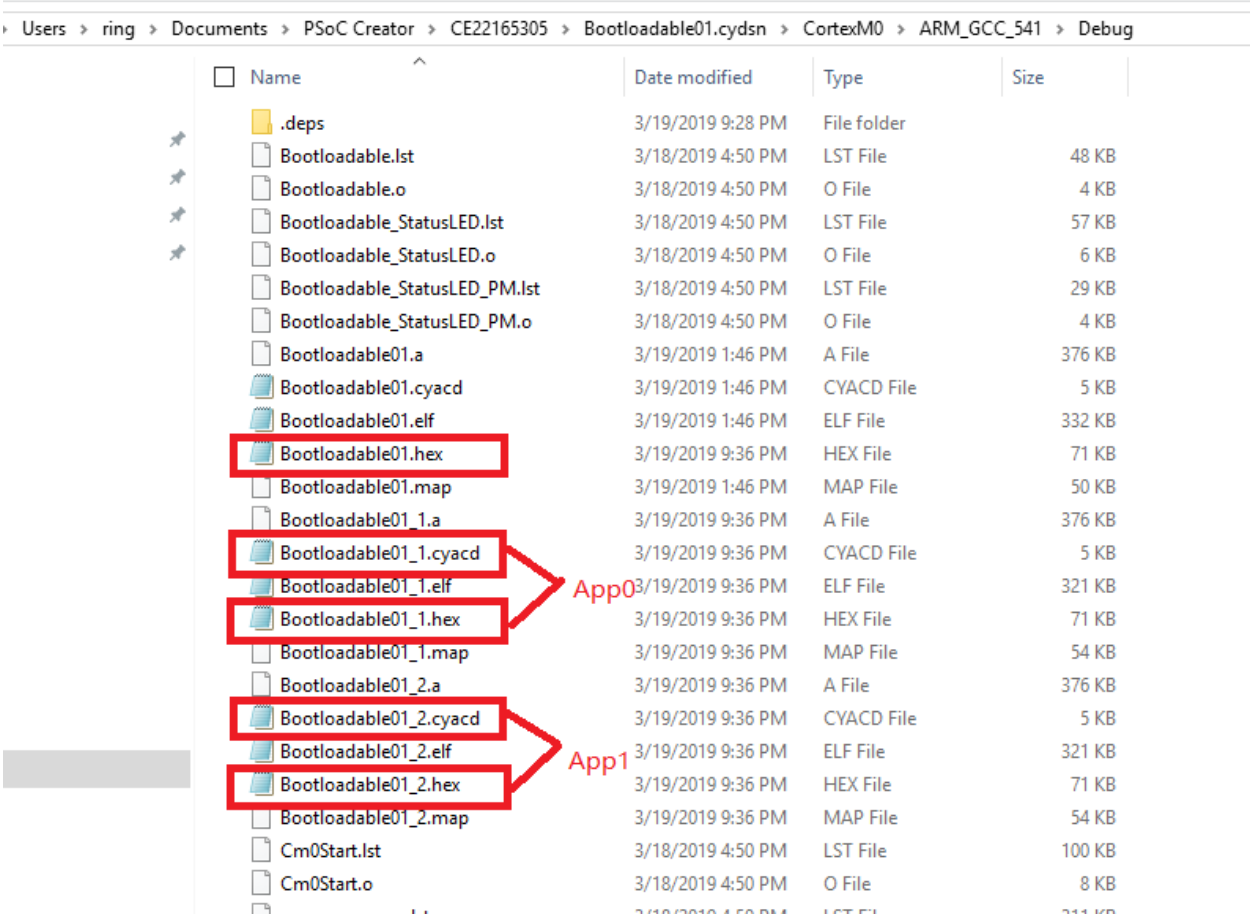


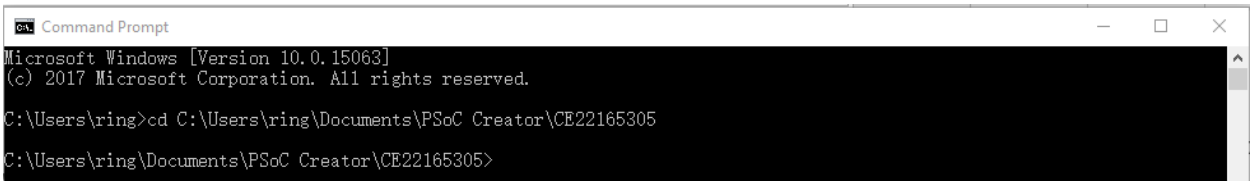
Figure4 Dual-Application Bootloadable Project Files

5: How to merge dual-application bootloadable hex file?

For production programming and testing, users may need to merge dual-application bootloadable hex files. This will enable the device to be programmed with a combined hex file, which will contain a bootloader and both applications.

I will do it in my PC: Windows 10, System type: 64-bit Operation System, X64-based processor.

- 5.1 Open a Command Prompt window.
- 5.2 Change the current directory to the folder containing the combined workspace file of the bootloader project.



❖ 5.3 To combine the project, type the command in command prompt.

"[Path of installation folder of PSoC Creator]\[version of PSoC Creator]\PSoC Creator\bin\cyelftool.exe" -M "[Path of first bootloadable_1.elf file]" "[Path of second bootloadable_2.elf file]" "[Path to save combined hex file]" --flash_size [FlashSize] --flash_row_size [FlashRowSize]

Figure5 shows the comand prompt screen combining the hex files.

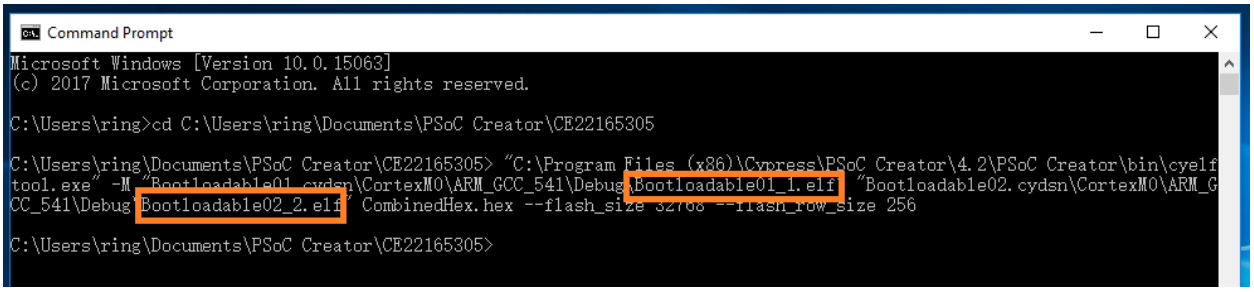


Figure5 Command Prompt Screen

After these steps, users will find the CombinedHex.hex file in the project folder.
If users use other device, they should change the flash_size and flash_row_size to match with the specific device they choose.