# Intel USB4 Evaluation Dock Update Manual

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# **Important:** Intel USB4 Evaluation Dock should be Powered off (No Power Supply must be Connected to the Board) when updating FW

1. **Equipment:**

1.1 **Dediprog SF600** (used to update the following components on the Intel USB4 Evaluation Dock):

| | |
|---|---|
| Goshen Ridge: | U8 – GR NVM |
| Delta Bridge: | UB10 – DB NVM |
| USB2.0 Hub: | UB6 – USB2 HUB NVM |


**Figure 1: Dediprog SF600**

## SF600 SPI NOR Flash Programmer

- **Reference Link:** https://www.dediprog.com/product/SF600
- Link for downloading software: https://www.dediprog.com/download?productCategory=SPI+Flash+Solution&productName=SF600+SPI+NOR+Flash+Programmer&fileType=10

**Figure 2: Test Clip**

## ISP Testclip (SO8) (Compatible with SF100)

Model Name: ISP-TC-8
ISP Testclip (SO8) (Compatible with SF100)

**Reference Link:** https://www.dediprog.com/product/ISP-TC-8

1.2 **Cypress MiniProg4 Program and Debug Kit CY8CKIT – 005 (used for updating the following components)**:

Cypress DMC (J5)
Cypress CCG5(J4).


**Figure 3: Cypress MiniProg4 Program and Debug Kit CY8CKIT – 005**

- **Reference Link:** https://www.digikey.com/product-detail/en/CY8CKIT-005/428-4713-ND/10314122?utm_medium=email&utm_source=oce&utm_campaign=3103_OCE20RT&utm_content=productdetail_US&utm_cid=457843&so=64303907&mkt_tok=eyJpIjoiTURjNVlXVTBOekV4TW1aaSIsInQiOiJabjNuUjdzczgxZ0NCdWJBbExnR2k3czkxNjhhZUVRcEFRdjlGSEZzeVZNNzdHcDRBSnEyYzhwa1F4QUJWS1NUeTJwcEtXV1Z6d2tlbnpQbHUxamJCU1hqUHNhd3I4c1ZBaEd0WWtBUklLc0VsZ3F5Tnc2eVRsYkZubXJrTm14dyJ9
- Link for downloading software (Name of software: Download PSoC Programmer 3.x.x.exe): https://www.cypress.com/documentation/software-and-drivers/psoc-programmer-archive
  Note: You need to create an account to able to download software
  Note: You need buy 5 Female to Male External Jumper for connecting.

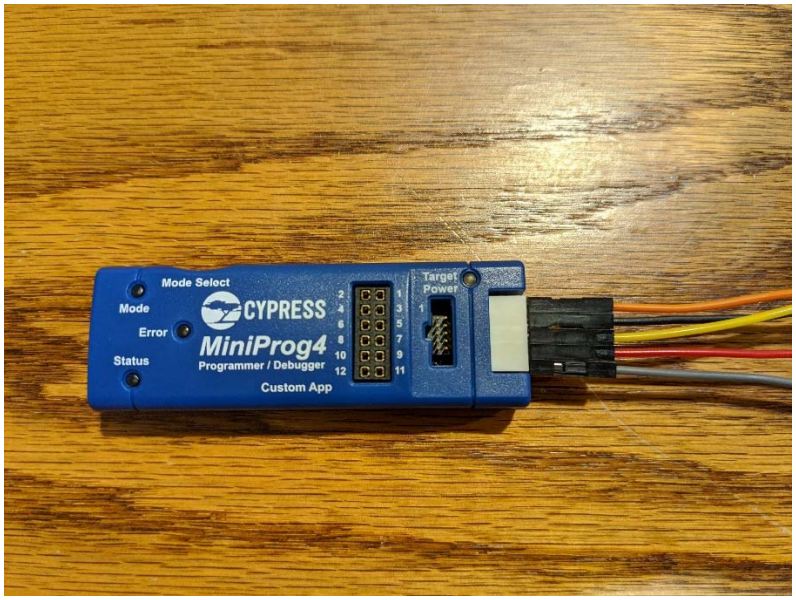

**Figure 4: Female To Male Jumper**

- **Reference Link:** https://www.amazon.com/GenBasic-Female-Solderless-Breadboard-Prototyping/dp/B077N7J6C4/ref=sr_1_7?dchild=1&keywords=male+to+female+jumper+wires&qid=1600894633&sr=8-7

## 2. Component Side and Back Side of Intel USB4 Evaluation Dock

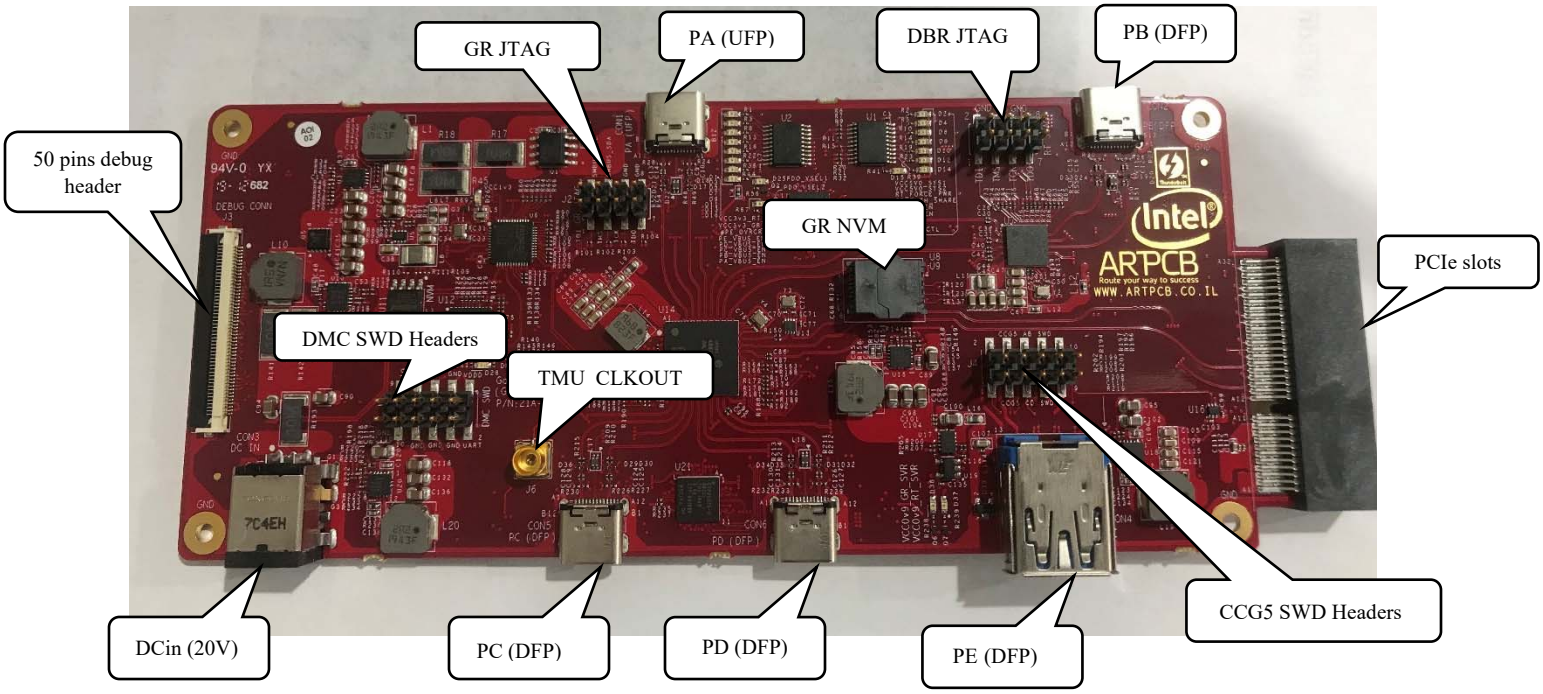


**Figure 5: Intel USB4 Evaluation Dock Component Side**

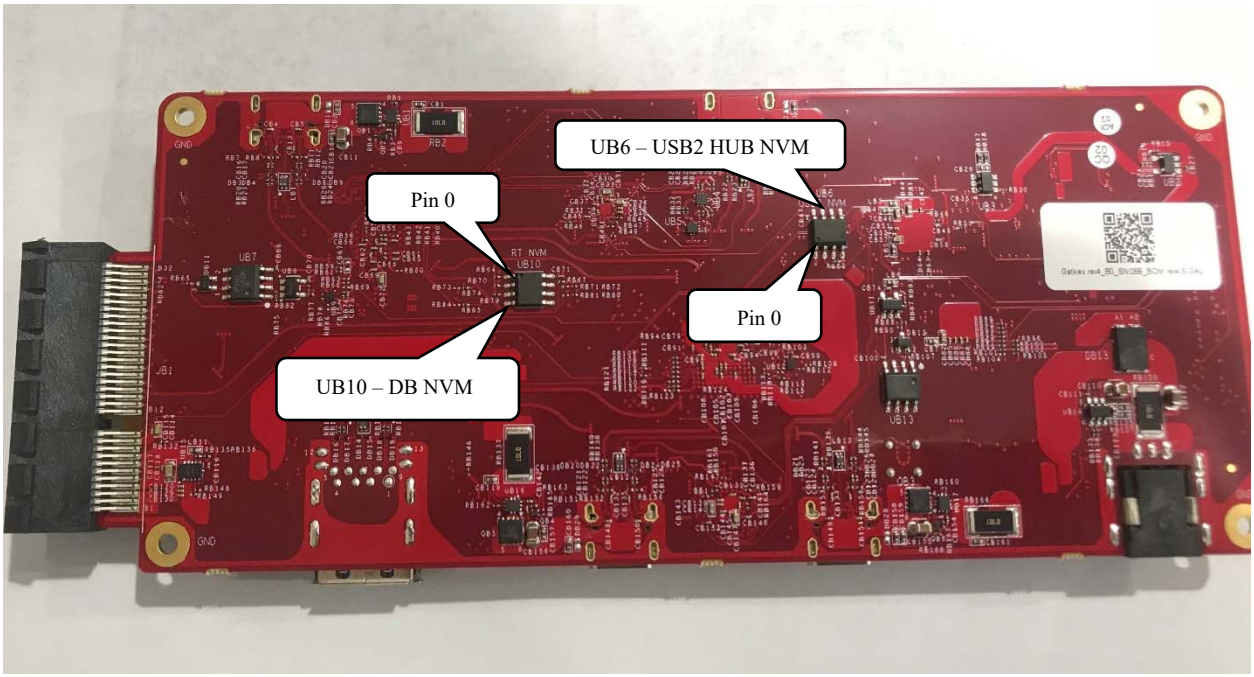


**Figure 6:** Intel USB4 Evaluation Dock **Back Side**

## Intel USB4 Evaluation Dock **BKC File example**

**Goshen Ridge:** GR_4C_A0_rev9_ GATKES_BOARD.bin

**Delta Bridge:** DBR_CDR_ON_BOARD_rev1_NOSEC_sign.bin

**Fresco Hub:** UB6_RegisterOnly_AddHeader_Merged_INTEL_1U5D_FL5801_1Q1_V02

**Cypress PD: DMC:** CY7C65219-40LQXIT_dmc_gatkex_creek_sha_3_3_0_1746_1_3_19_120W.hex
**CCG5:** CYPD5235-96BZXI_gatkex_3_3_1_39_2_8_0_nb.hex

3. **GoshenRidge FW Update**

Example file**:** GR_4C_A0_rev9_ GATKES_BOARD.bin

- Step 1: Plug Dediprog SF600 flasher to PC
- Step 2: Open Dediprog Engineering Application:
    - Go to Config Menu at the Top→Select Batch Operations(Top Left)→Check the Batch Operation Options is the same as Yellow Hightlight (see Figure 7) -→everything else leave as default

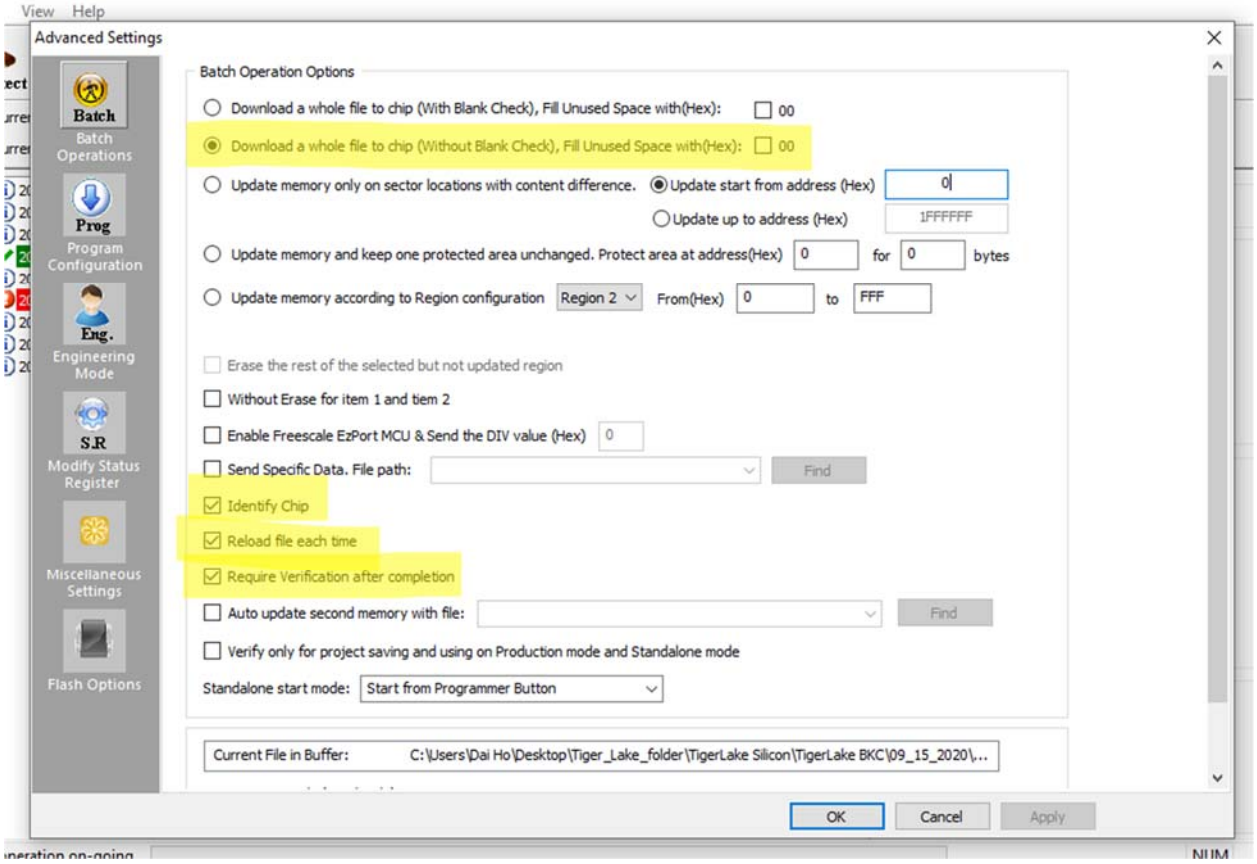


**Figure 7: Batch Operation Options**

- Step 3: Open U8 – NVM and take out the chip inside (see Figure 8)

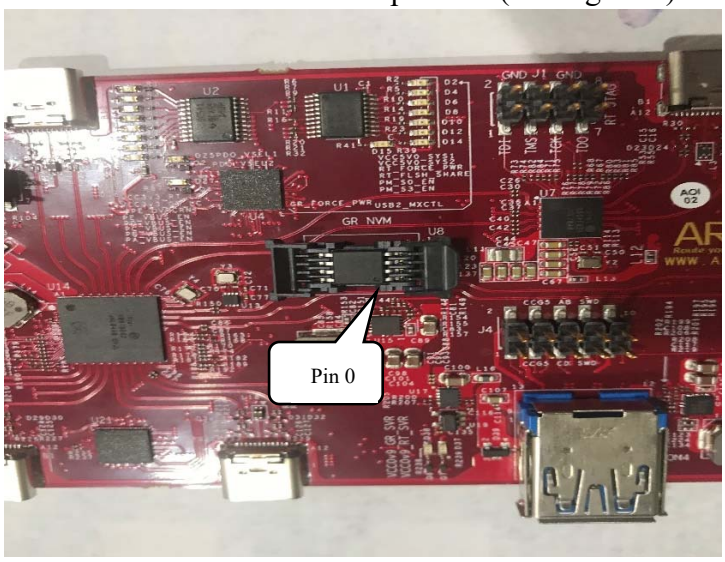


**Figure 8: Chip inside U8 NVM**

- Step 4: Connect the SPI flash component to flasher (chip inside U8).
  Note: Make sure pin 0 of the chip is at the white line of the clip (see Figure 9)

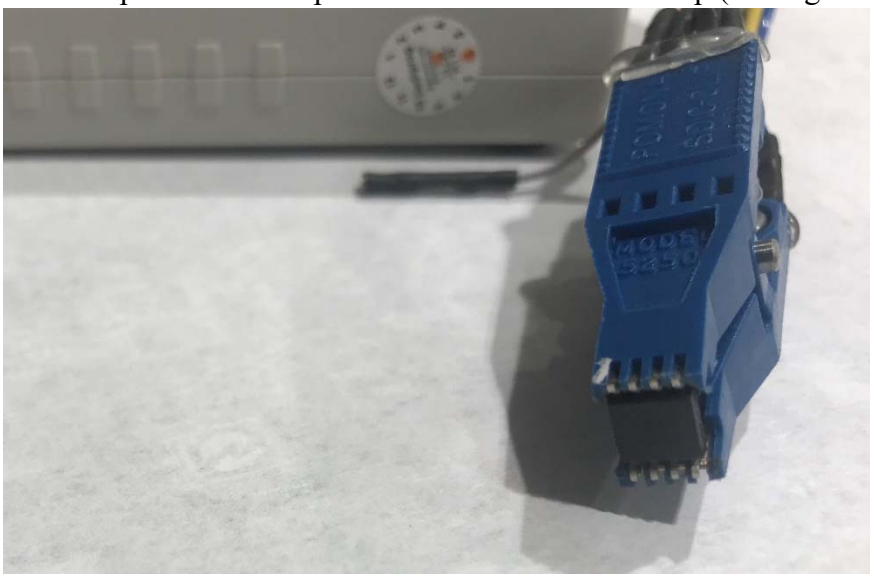

**Figure 9: Connect the SPI Flash component to flasher (U8)**

- Step 5: Detect → choose First Chip number in the Memory list. (See Figure 10)
- Note: If you do not see Memory list after Detect Chip→ Please check the Connection between Chip and Test Clip-→Make sure they are connected correctly

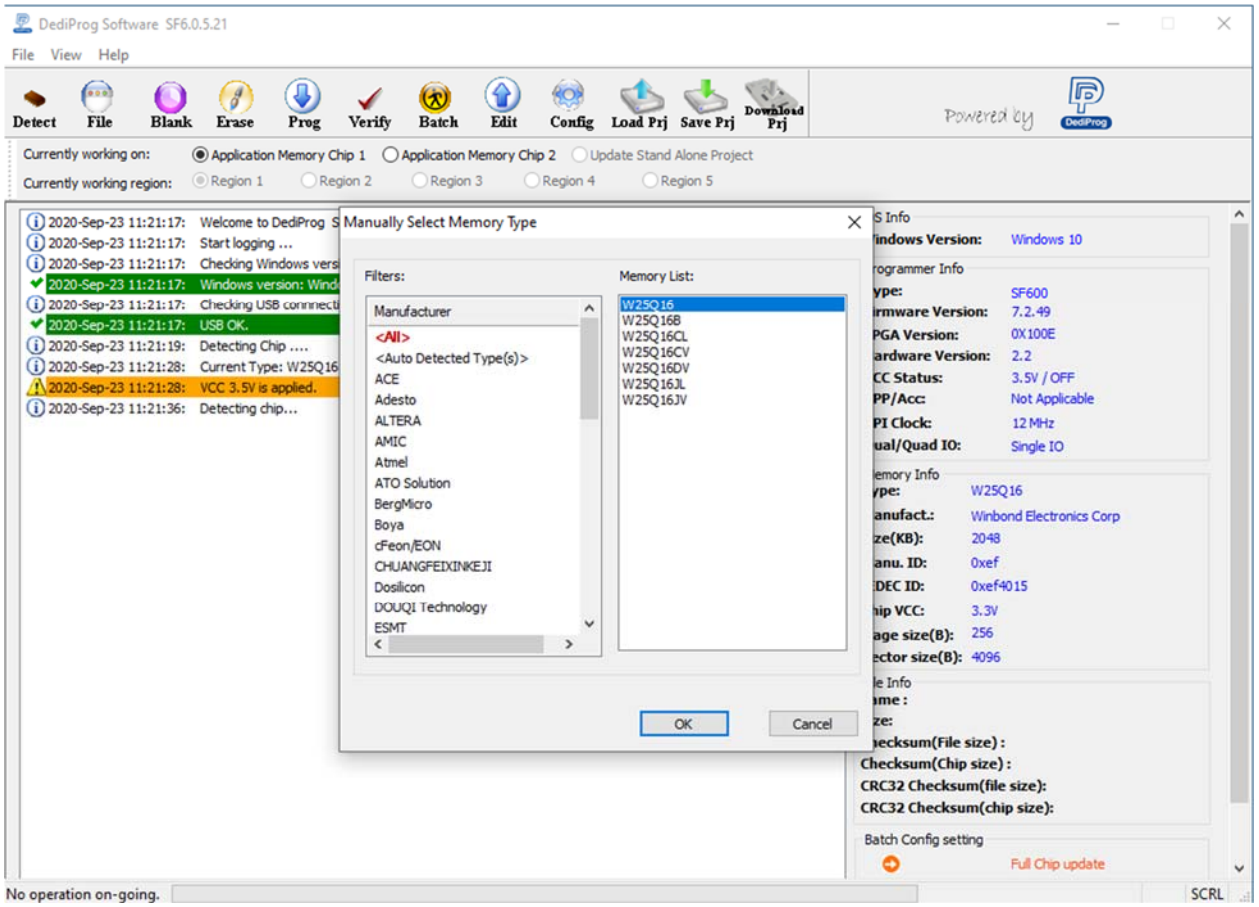


**Figure 10: Choose the chip from memory list**

Note: Majority of the time, the first component in the list is the correct chip.

- Step 6: File → load Goshen Ridge FW from BKC file bin file (See Figure 11), Select OK

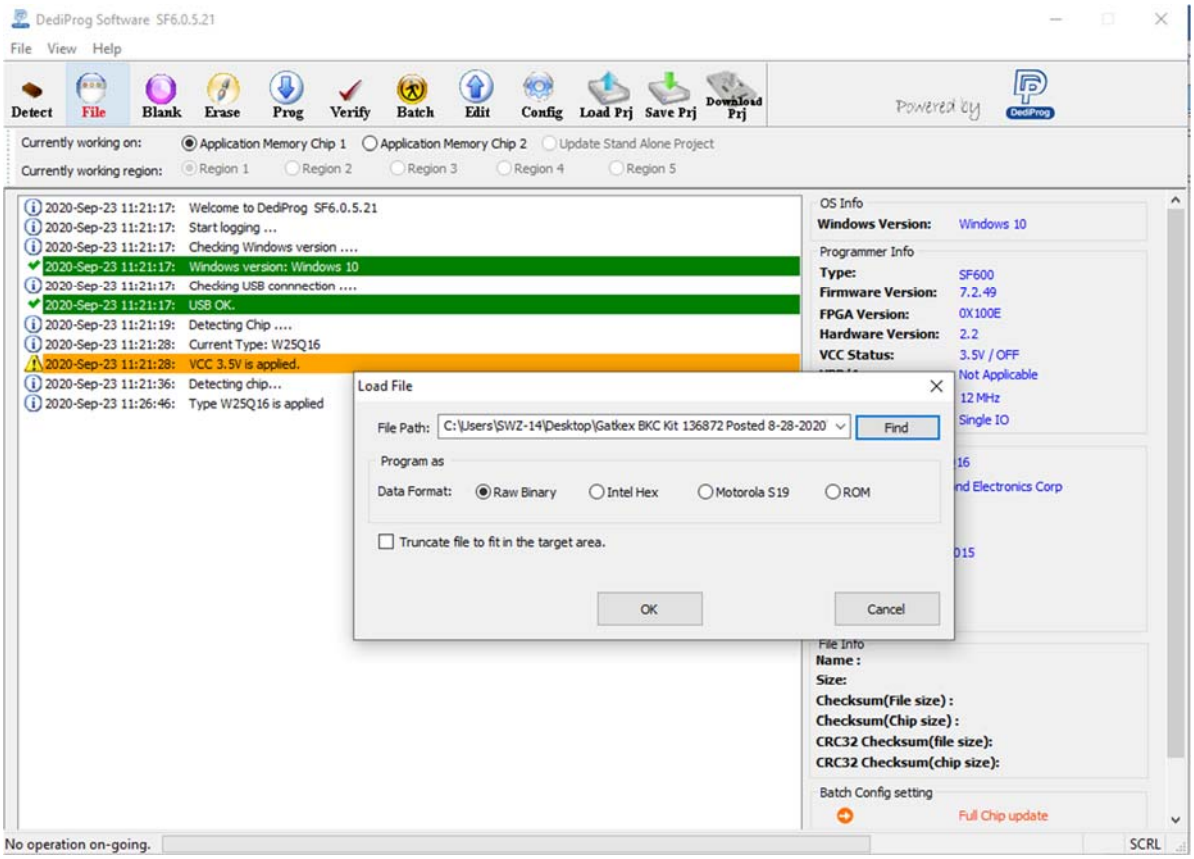


**Figure 11: Load Intel USB4 Evaluation Dock bin file**

- Step 7: Batch
- Step 8: Wait for all stages are PASS(see Figure 12), and Operation Completely

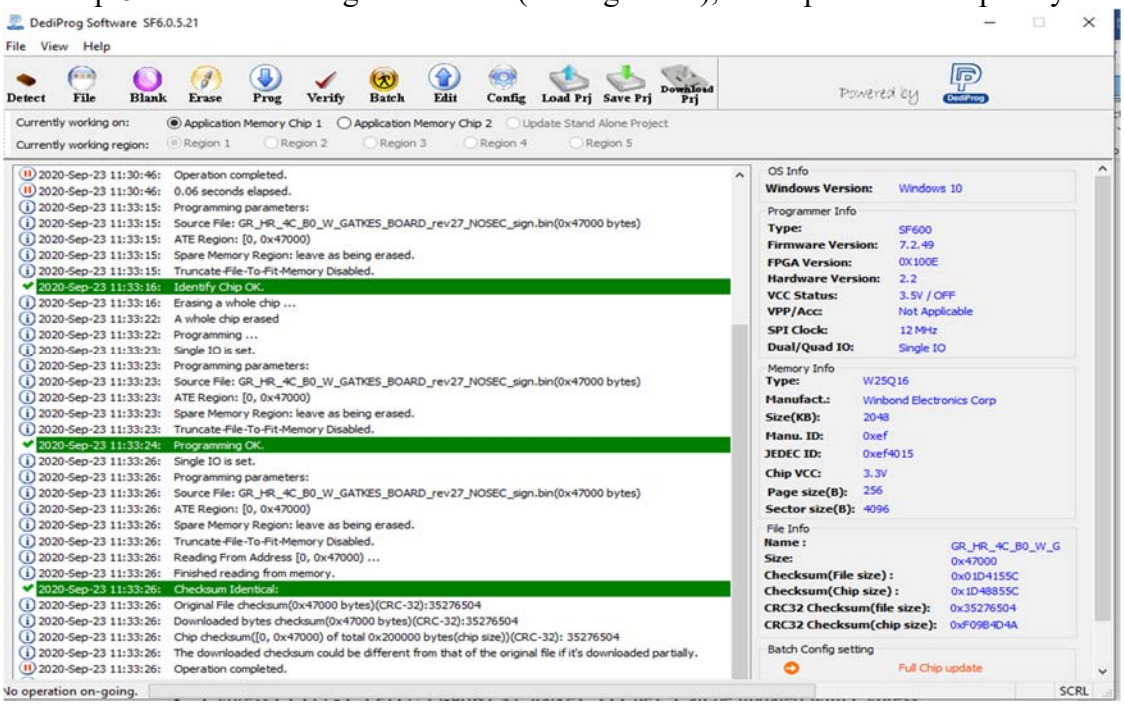


**Figure 12: All stages are PASS**

Note:

- All stages are PASS only if you choose the correct chip in step 5.
- In case you choose the wrong chip in step 5, you will see the following message

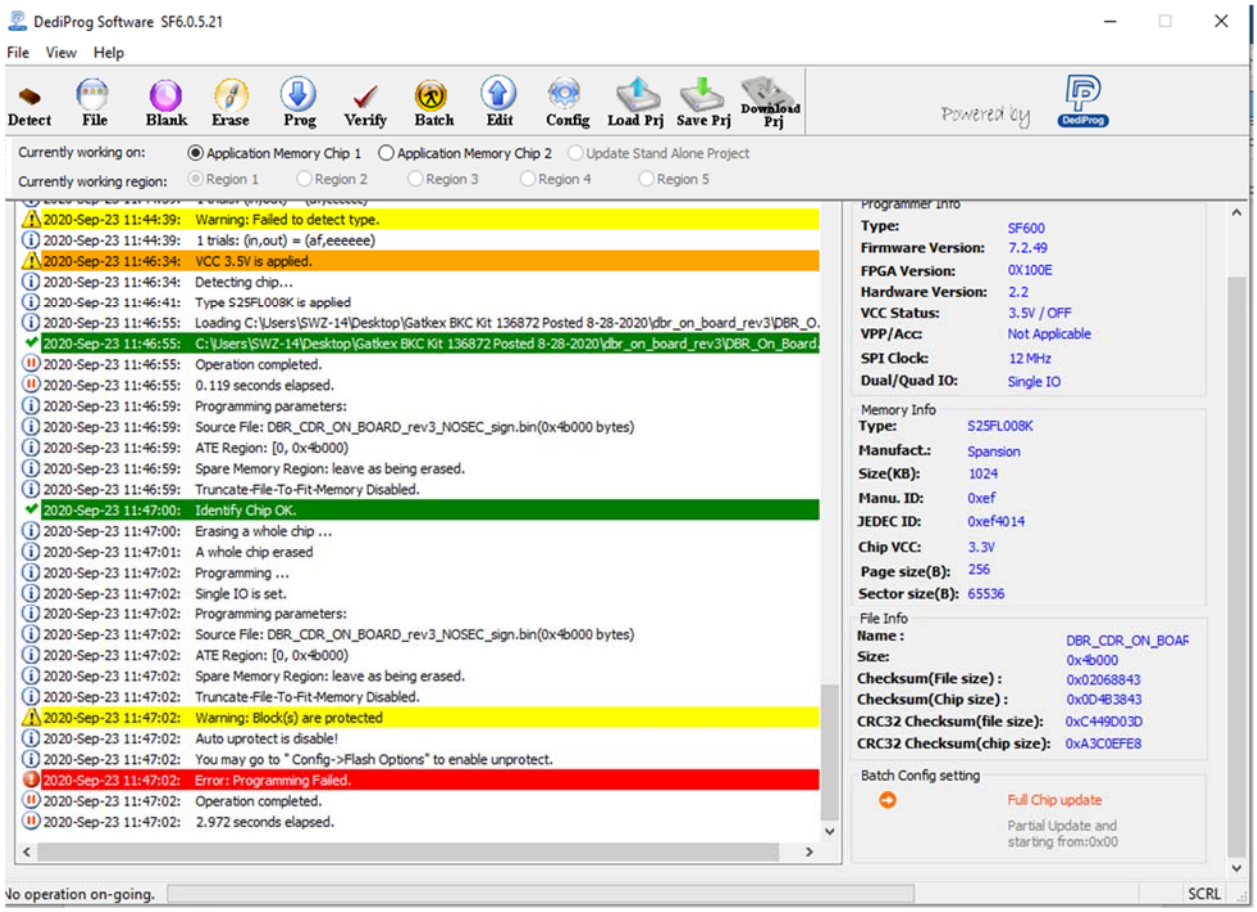


**Figure 13: Error message after Batch when we choose the wrong chip**

Troubleshoot:

- At Step 5: Detect → choose Second Chip number(W25Q168) of component in the list
- Repeat Step 6 to Step 8
- If Error:Programming Fail Message still occur→ At Step 5: Detect → choose Third Chip number (W25Q16CL)
- Repeat Step 6 to Step 8

- Step 9: Put the chip back to U8 GR NVM. Make sure pin 0 is on arrow position of U8 GR NVM .

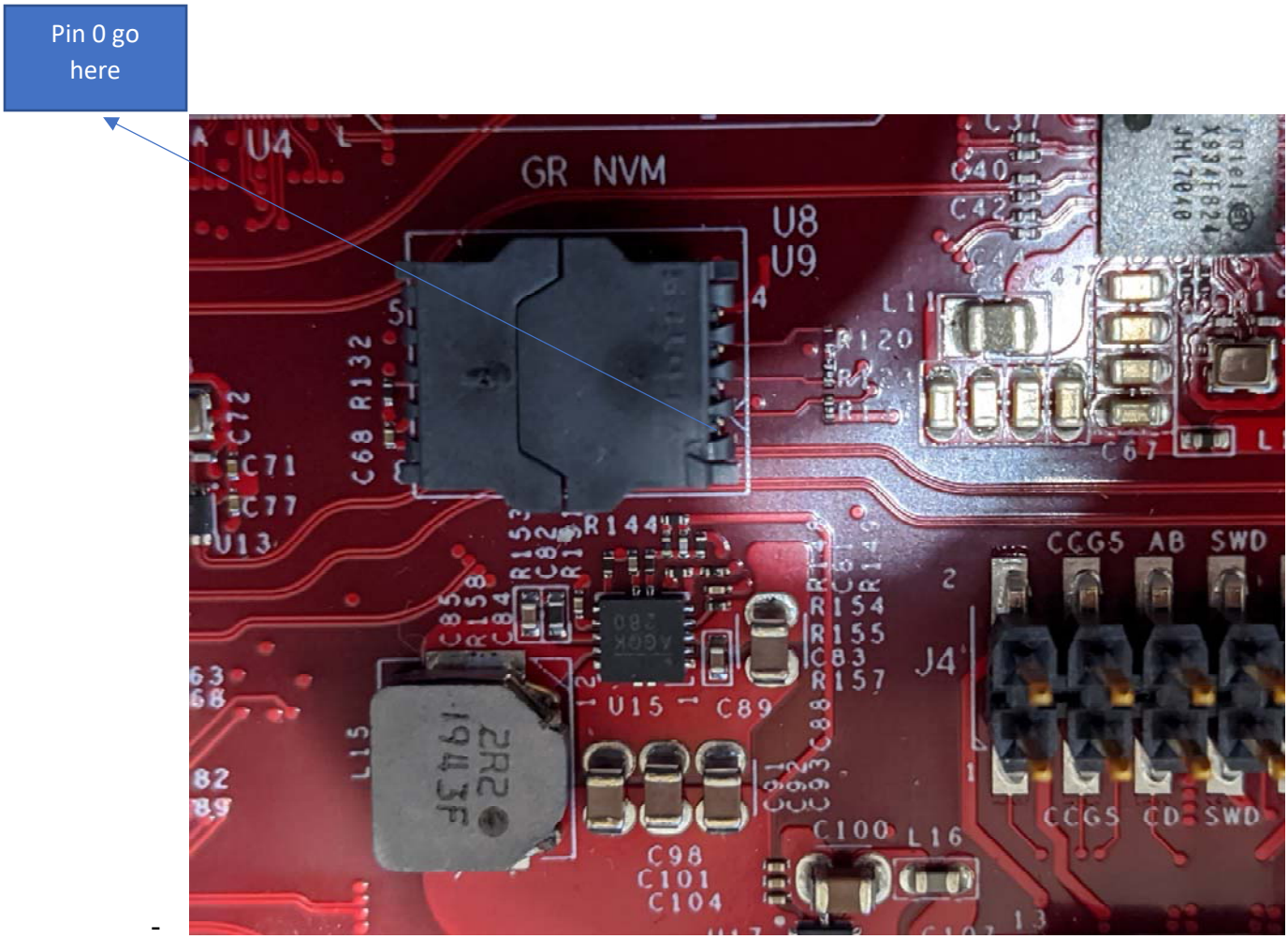


**Figure 14: Arrow Position of U8 GR NVM. Pin0 of Chip will go here**

## 4. Delta Bridge FW Update

Example File: DBR_CDR_ON_BOARD_rev1_NOSEC_sign.bin
Delta Bridge FW will be updated into UB10 component

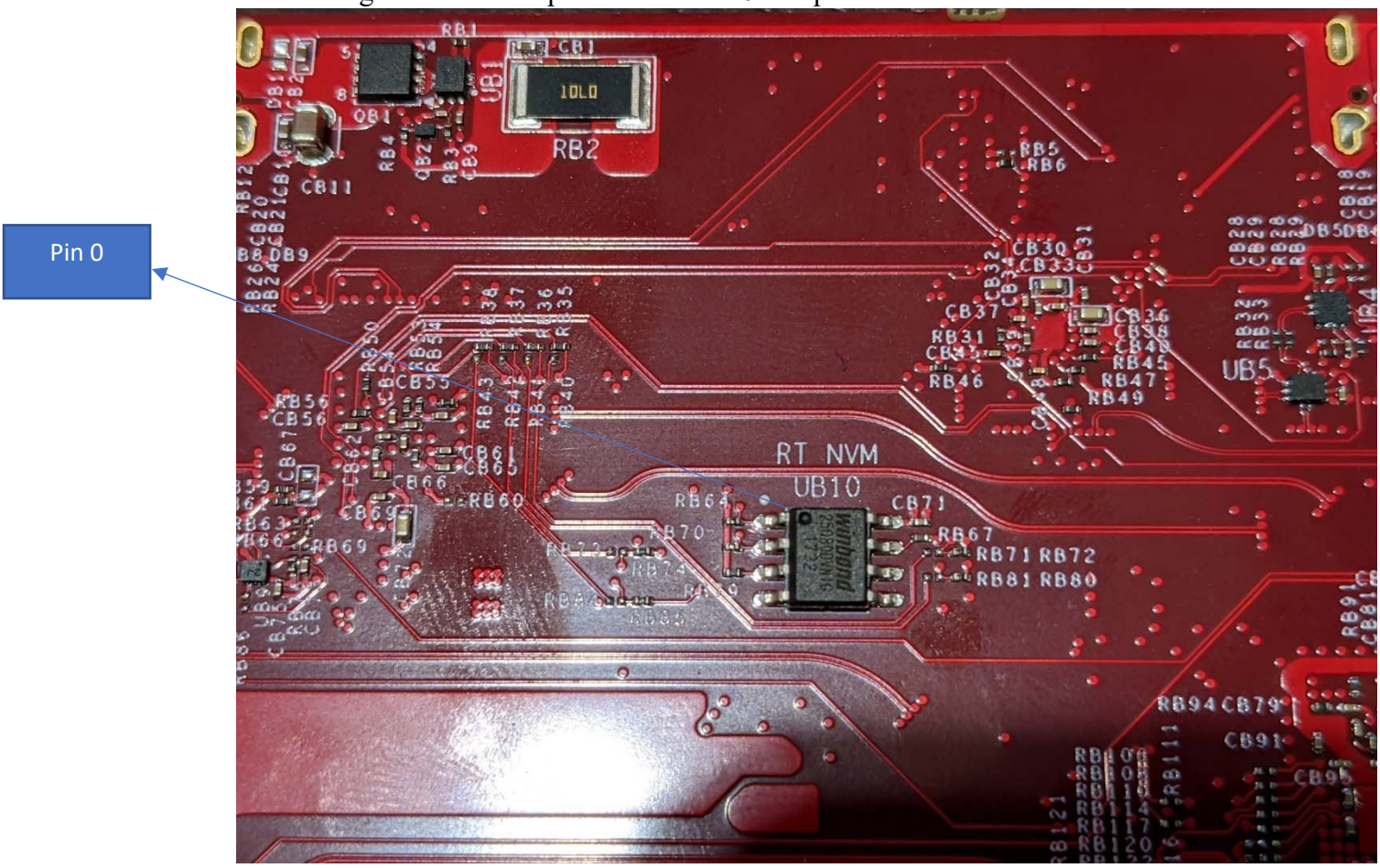


**Figure 15: Pin 0 at UB10**

While Dediprog SF600 flasher connected to PC and Dediprog application open:

- Step 1: Connect the SPI flash component to flasher (UB10). Make sure the white line in the test clip connect to pin 0 (see Figure 16)

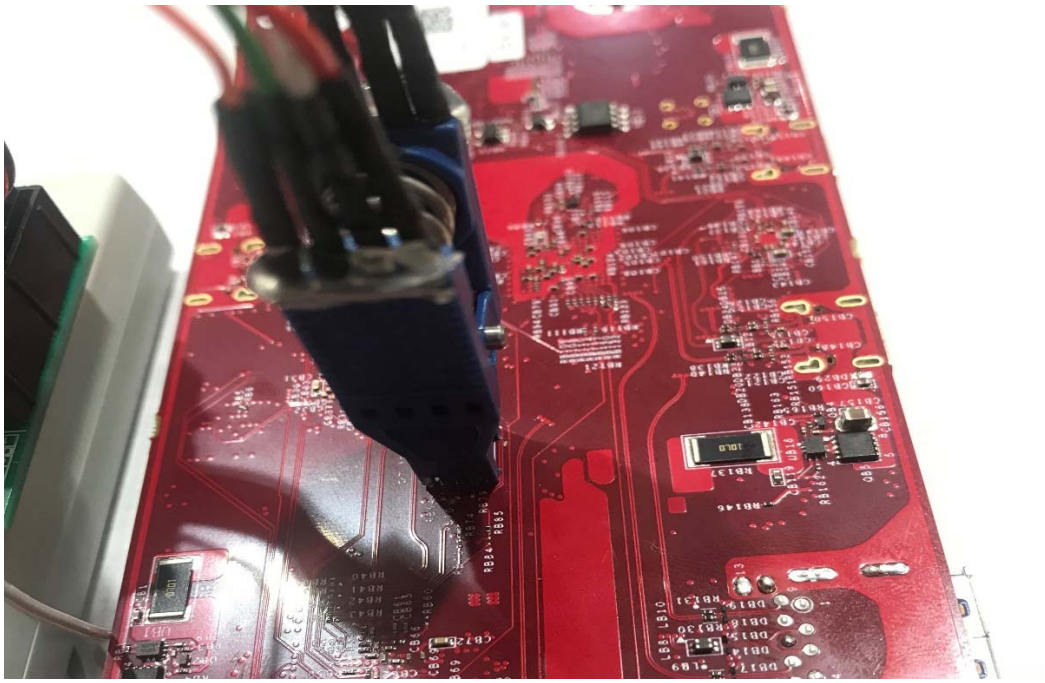

**Figure 16: Connect the SPI flash component to UB10**

- Step 2: Detect → choose First Chip number in the Memory list. (See Figure 17)
- Note: If you do not see Memory list after Detect Chip→ Please check Connection between Chip and Test Clip → Make sure they are connected correctly

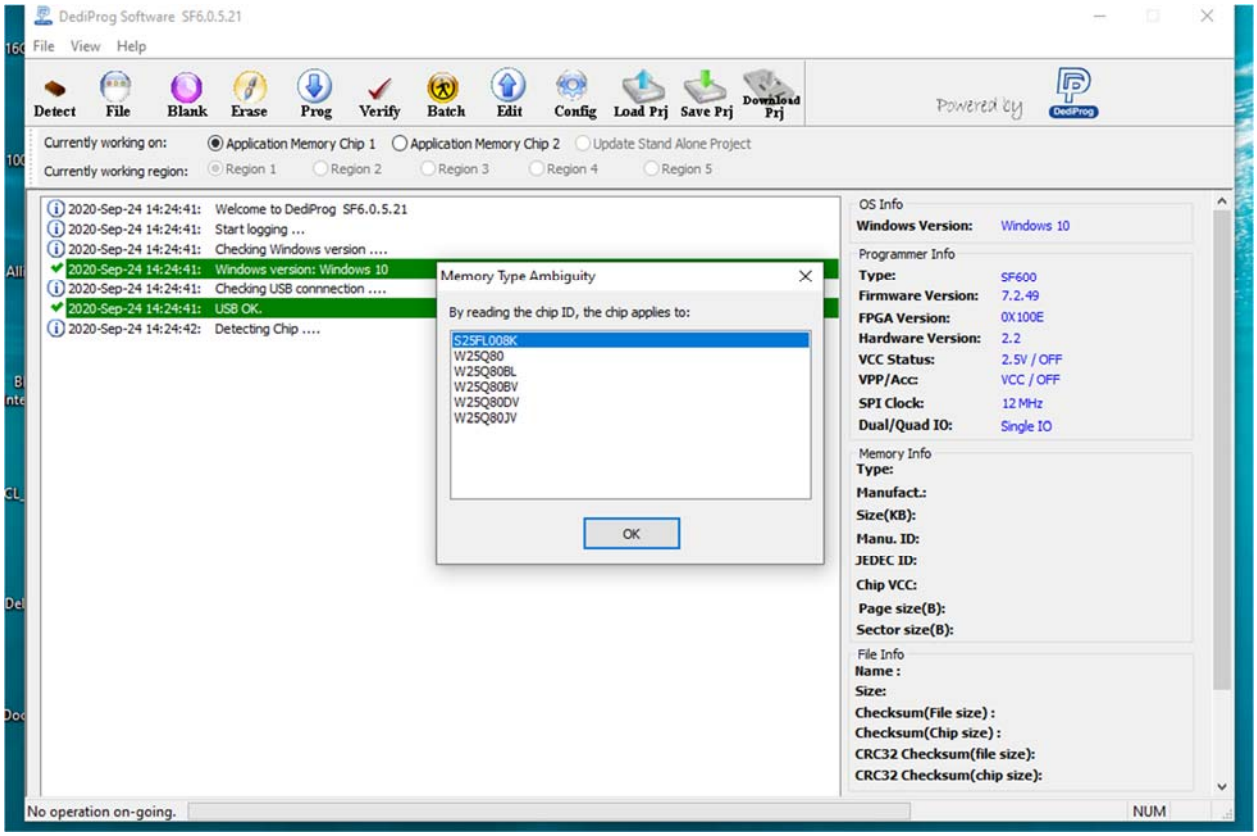


**Figure 17: Choose the chip from memory list**

Note: For most of the time, the first component in the list is a correct chip.

- Step 3: File → load Delta Bridge FW from BKC file bin file (See Figure 18)

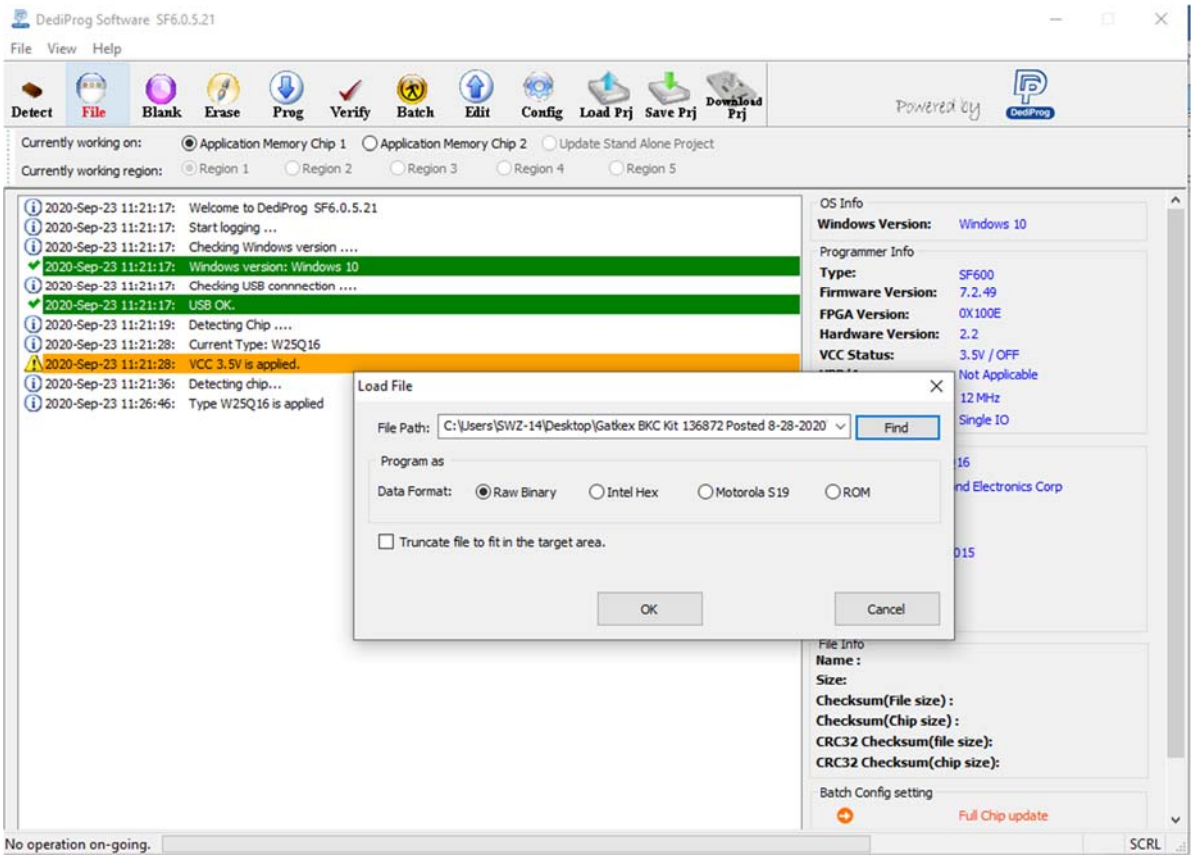


**Figure 18: Load Intel USB4 Evaluation Dock bin file**

- **NOTE:** You may need to hold test clip to make sure test clip and chip connected.
- Step 4: Batch

- Step 5: Wait for all stages are PASS (see Figure 19) and Operation Completed.

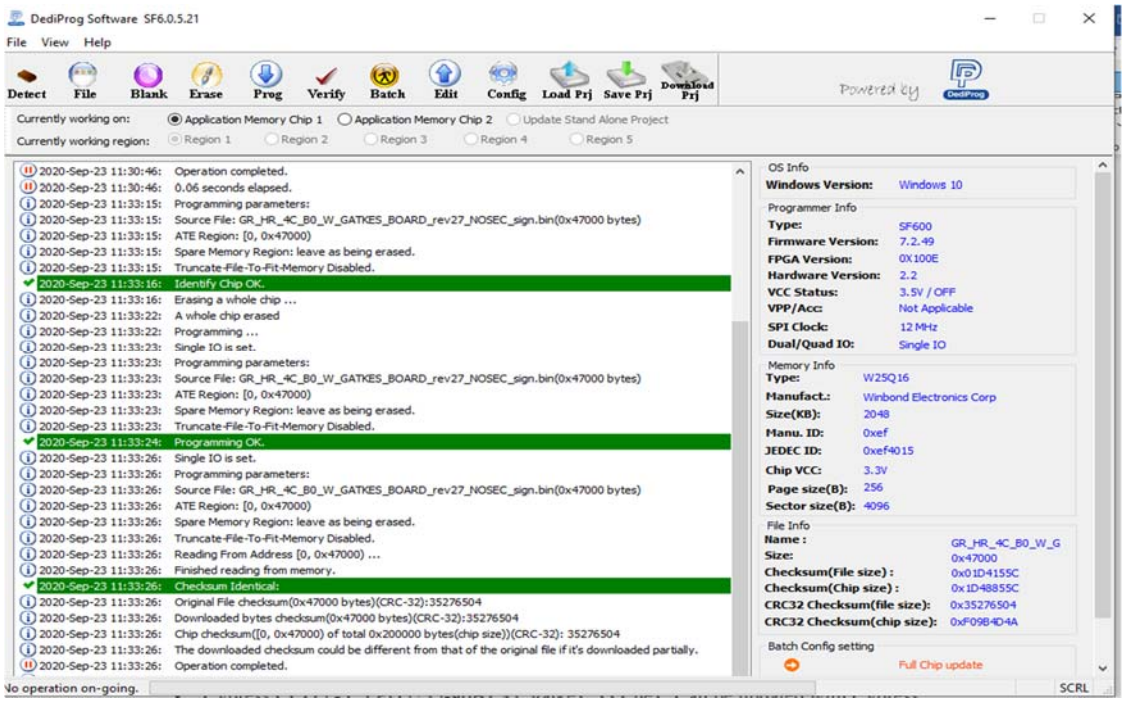


**Figure 19: All stages are PASS**

Note:

- All stages are PASS only if you choose the correct chip in step 2.

- In the case you choose the wrong chip in step 2, you will see the following message

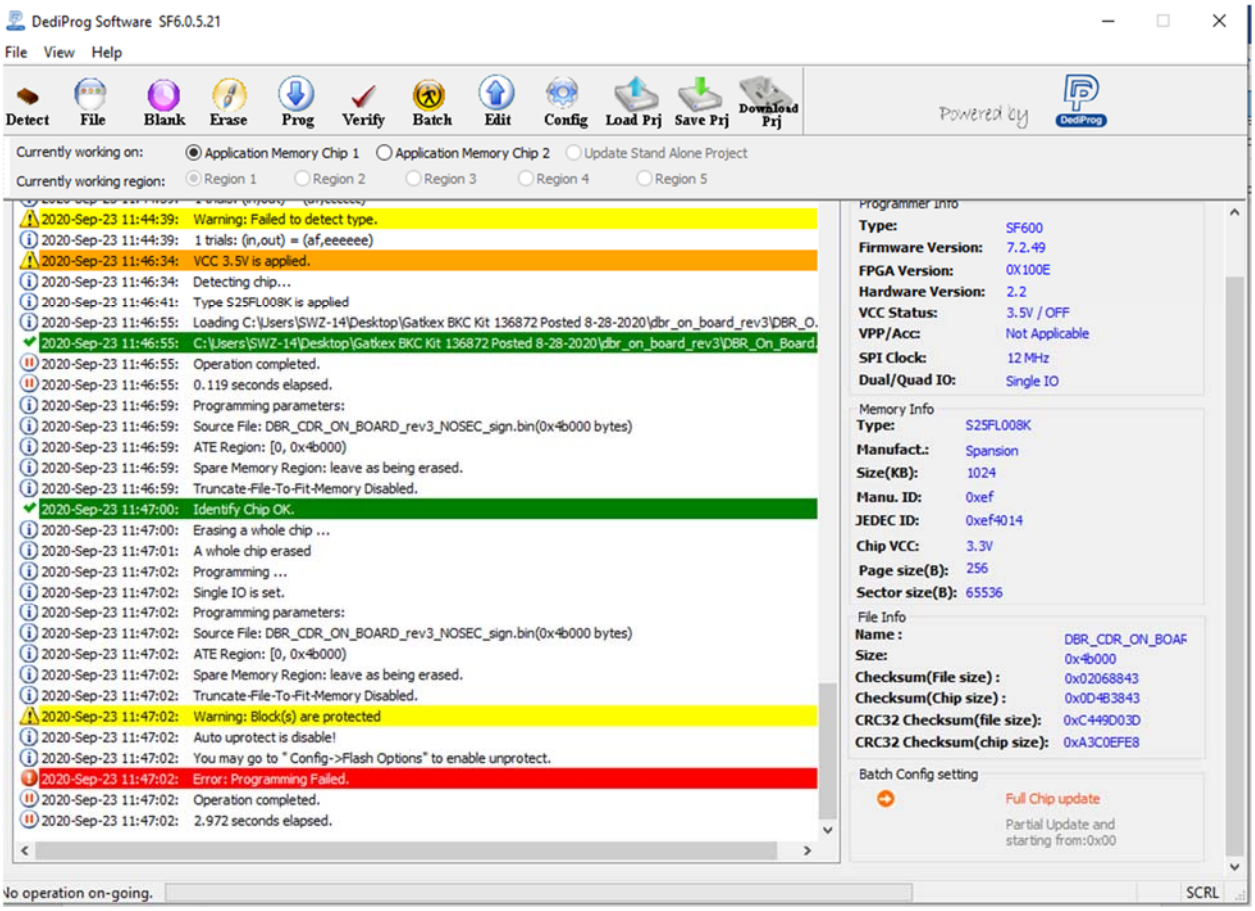


**Figure 20: Error message after Batch when we choose the wrong chip**

- Troubleshoot:
- At Step 3: Detect → choose Second Chip number (W25Q80) of component in the list
- Repeat Step 3 to Step 5
- If Error:Programming Fail Message still occur→ At Step 2: Detect → choose Third Chip number(W25Q80BL)
- Repeat Step 3 to Step 5

## 5. Fresco Hub FW Update

Example File:UB6_RegisterOnly_AddHeader_Merged_INTEL_1U5D_FL5801_1Q1_V02

Fresco Hub FW Update into UB6 component

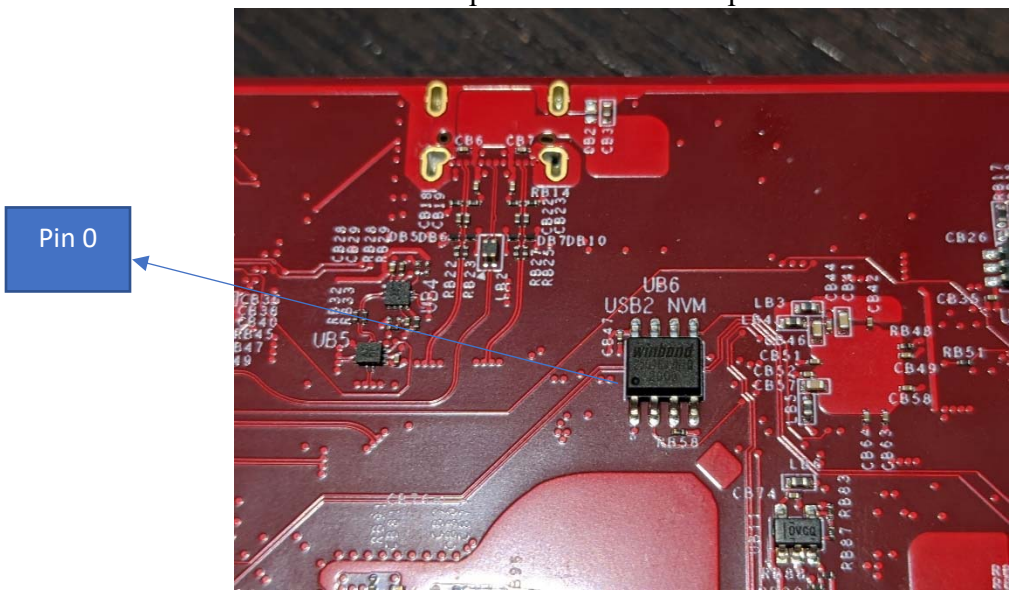


**Figure 21: Pin 0 at UB6**

While Dediprog SF600 flasher connected to PC and Dediprog application open:

- Step 1: Connect the SPI flash component to flasher (UB6). Make sure the white line in the clip connect to bit 0.
- Step 2: Detect → choose First Chip number in the Memory list. (See Figure 22)
- Note: If you do not see Memory list after Detect Chip→ Please check Connection between Chip and Test Clip →Make sure they are connected correctly

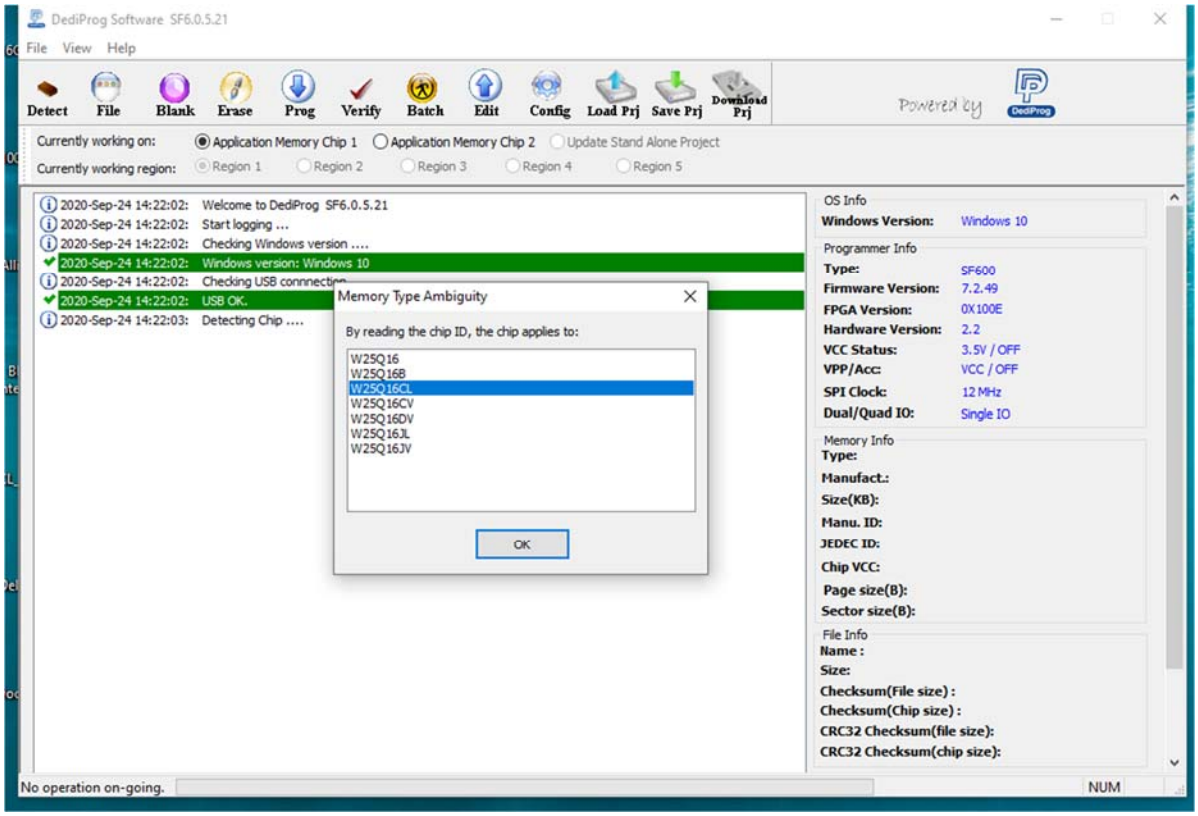


**Figure 22: Choose the chip from memory list**

Note: For most of the time, the first component in the list is the correct chip.

- Step 3: File → load Fresco USB Hub FW from BKC file bin file (See Figure 23)

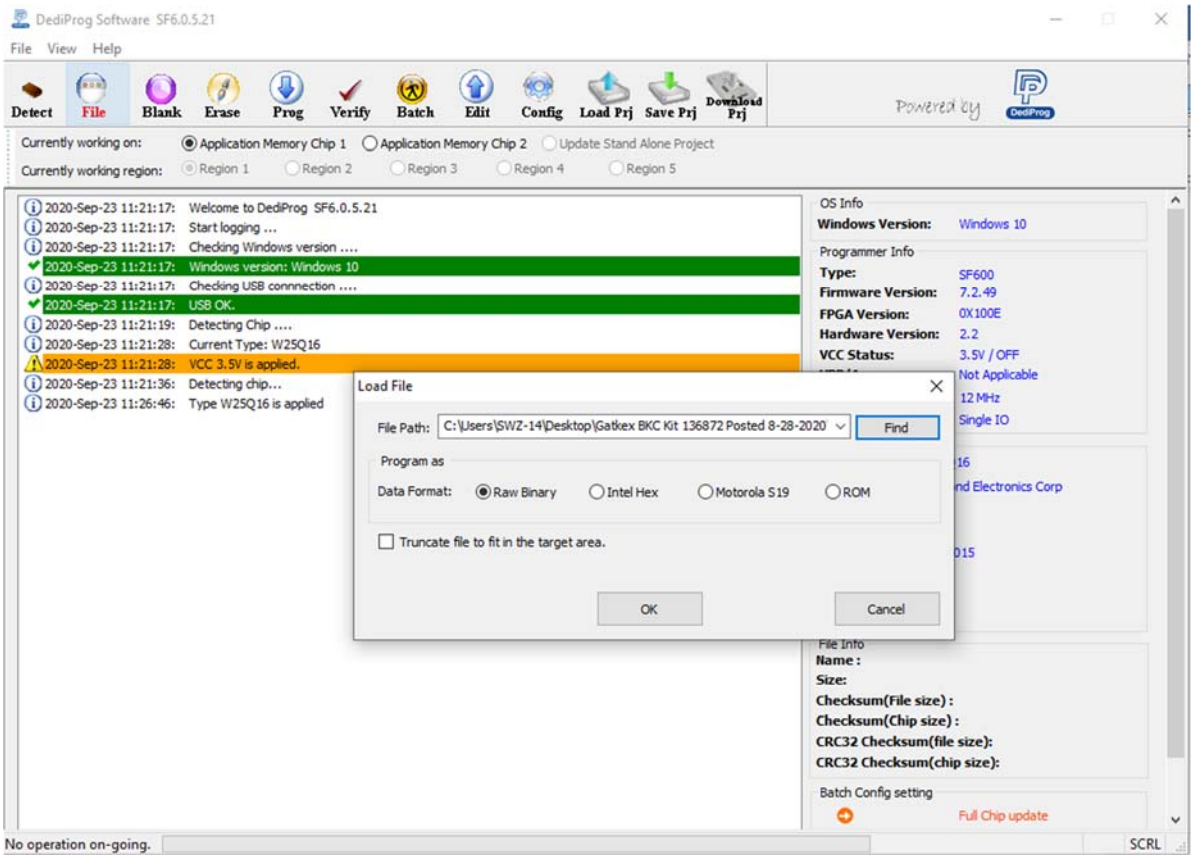


**Figure 23: Load Intel USB4 Evaluation Dock bin file**

- **NOTE:** You may need to hold test clip to make sure test clip and chip connected.
- Step 4: Batch
- Step 5: Wait for all stages are PASS (see Figure 24), and Operation Completely

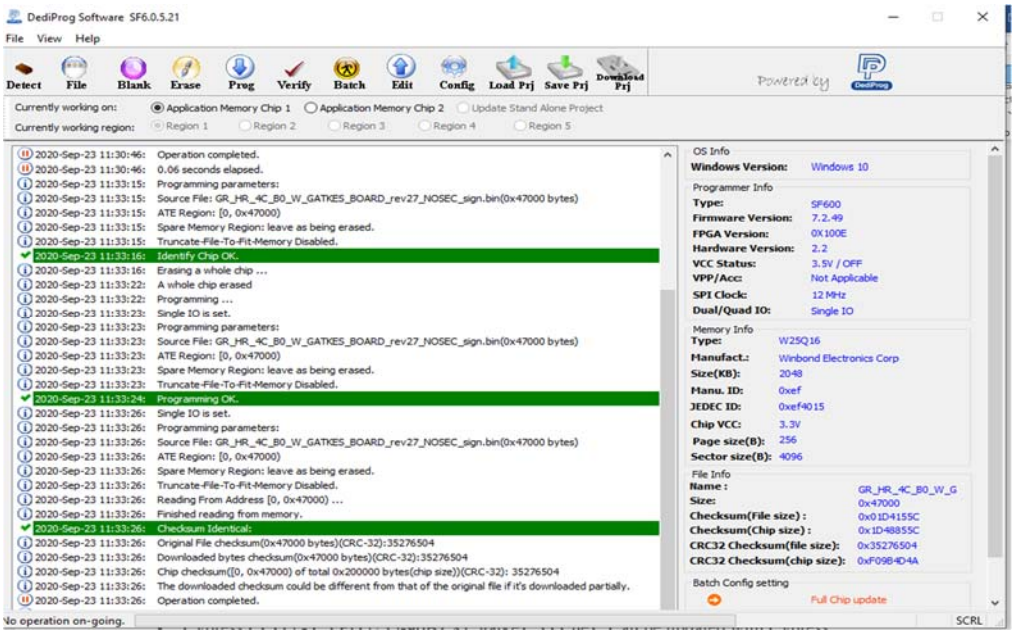


**Figure 24: All stages are PASS**

Note:

- All stages are PASS only if you choose the correct chip in step 2.
- In the case you choose the wrong chip in step 2, you will see the following message

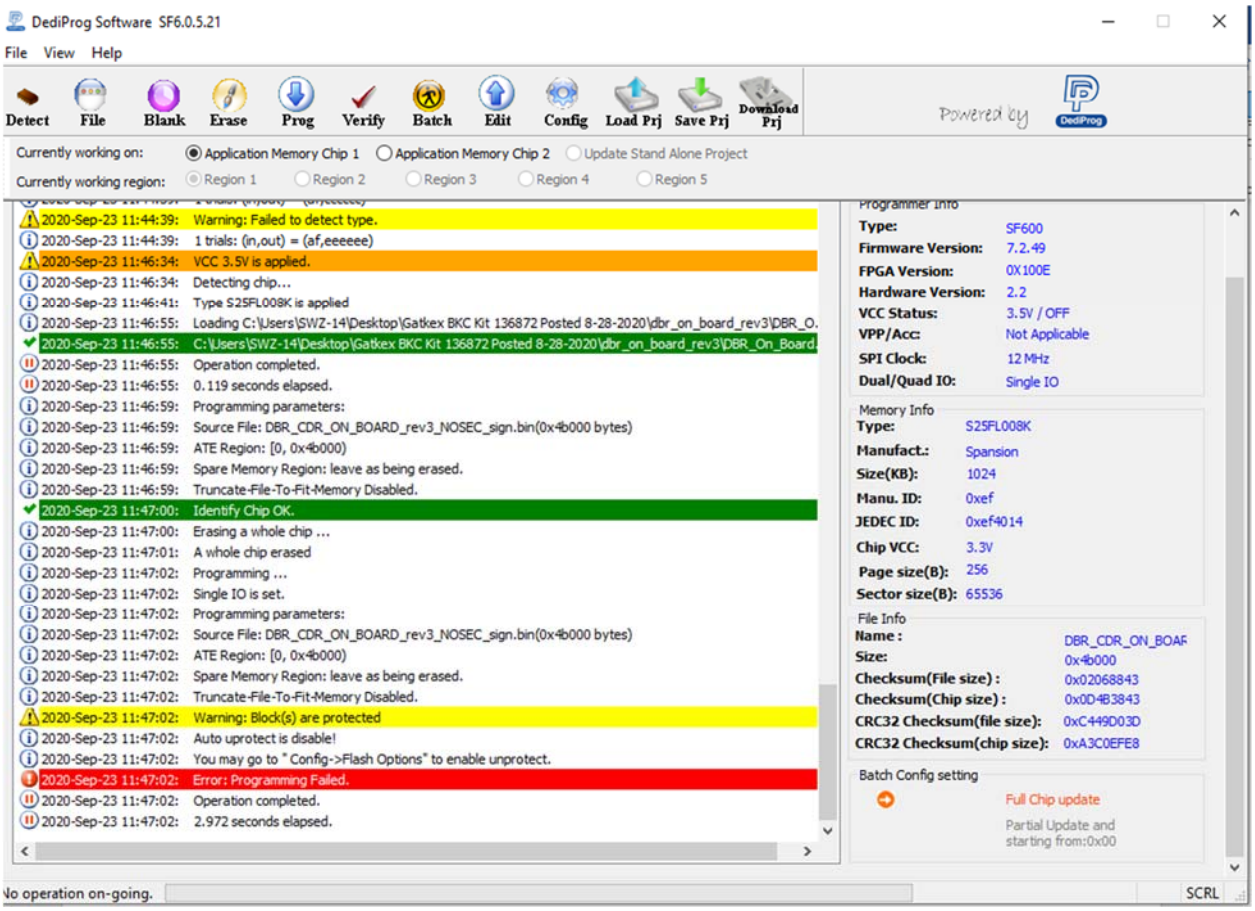


**Figure 25: Error message after Batch when we choose the wrong chip**

- Troubleshoot:
- At Step 3: Detect → choose Second Chip number(W25Q168) of component in the list
- Repeat Step 3 to Step 5
- If Error: Programming Fail Message still occur→ At Step 2: Detect → choose Third Chip number(W25Q16CL)
- Repeat Step 3 to Step 5

## 6. Cypress DMC FW Update

Example **DMC:** CY7C65219-40LQXIT_dmc_gatkex_creek_sha_3_3_0_1746_1_3_19_120W.hex
Example **CCG5:** CYPD5235-96BZXI_gatkex_3_3_1_39_2_8_0_nb.hex

- Step 1: Plug Cypress MiniProg4 Program and Debug Kit CY8CKIT to the PC
- Step 2: Connect MiniProg4 to DMC SWD connector (J5).
  Note: Only flash to the top five header pins of DMC SWD

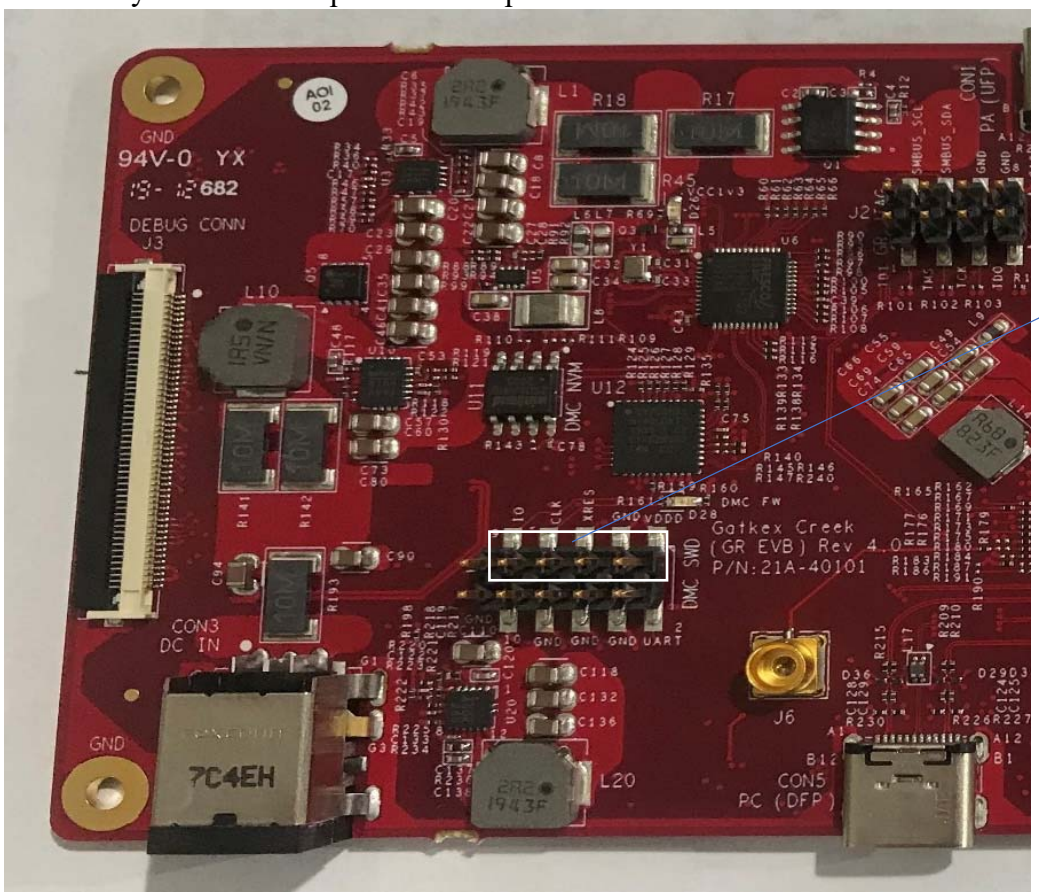


**Figure 26: DMC Headers (pin 6 to pin 10)**

- Note: Make sure jumper connected to SWDIO pin of Cypress MiniProg4 connect to Pin 10 at DMC header

| Cypress Minipro4 Pin | Intel USB4 Evaluation Dock DMC Header Pin |
|---|---|
| SWDIO | Pin 10 |
| SWCLK | Pin 9-CLK |
| XRES | Pin 8-XRES |
| GND | Pin 7-GND |
| VTARG | Pin 6-VDD |

- Step 3: Open Cypress PSOC programmer

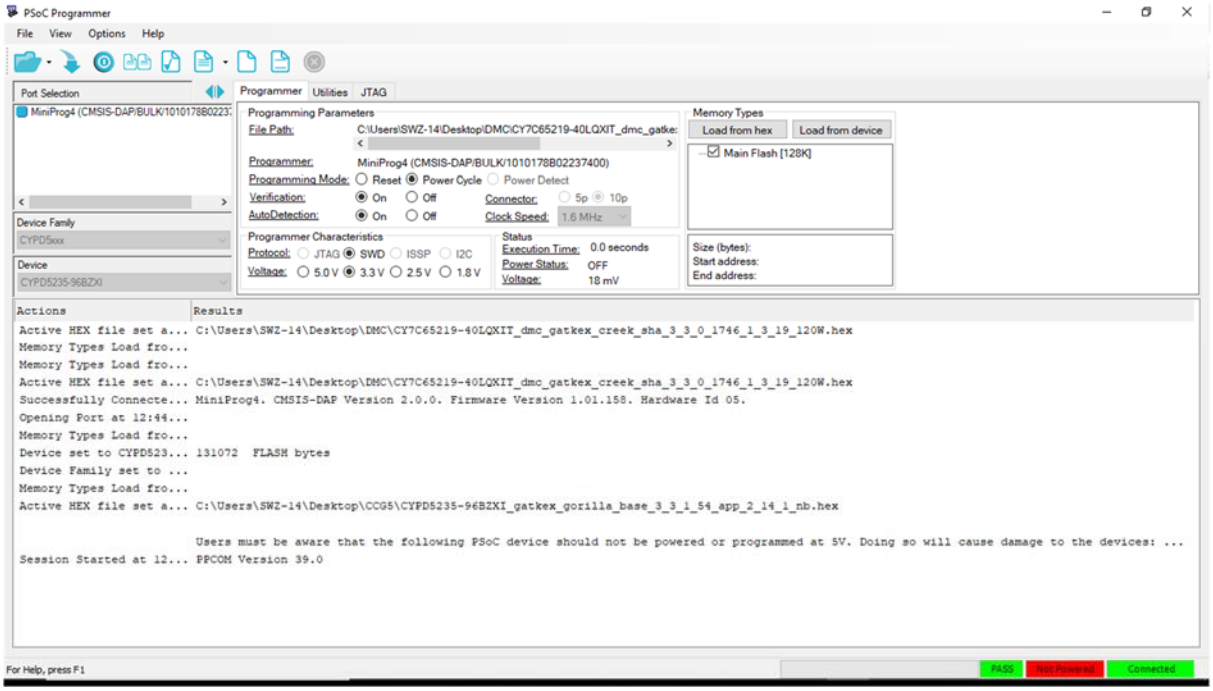


**Figure 27: Cypress PSOC programmer**

Note: Make sure you see MiniProg4 in Port Selection

- Step 4: Load file – DMC FW hex file (It may be inside PD folder from BKC file)

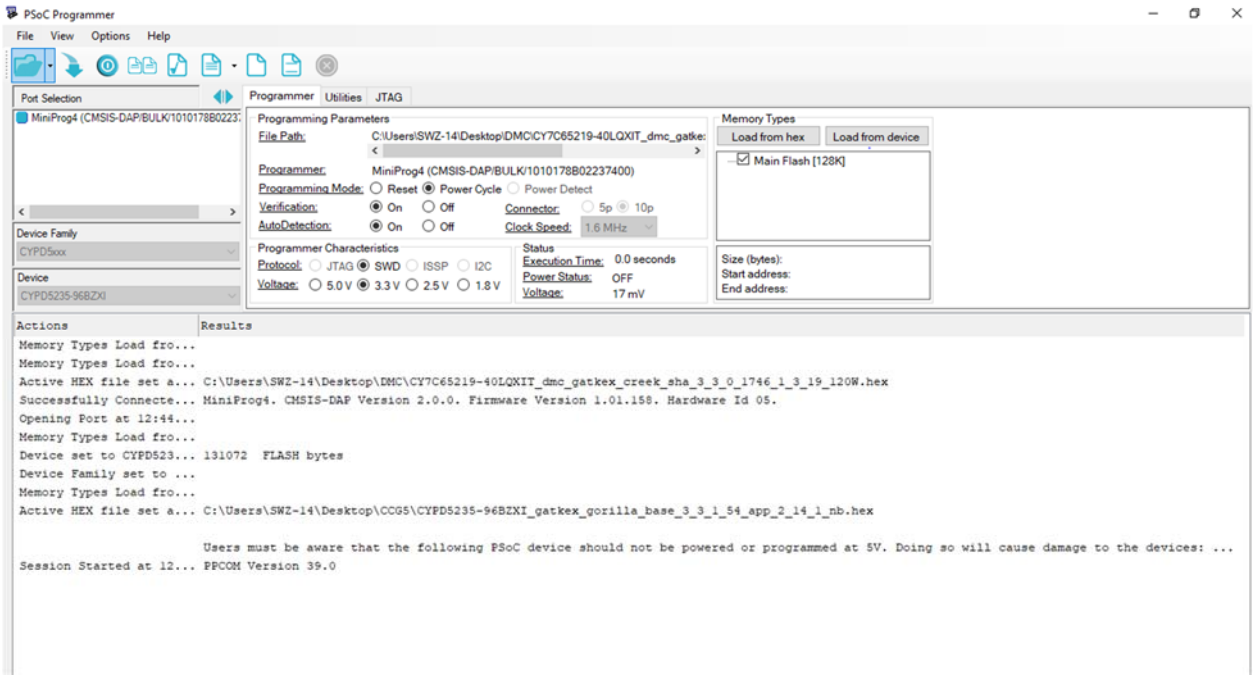


**Figure 28: Load file**

- Step 5: Program

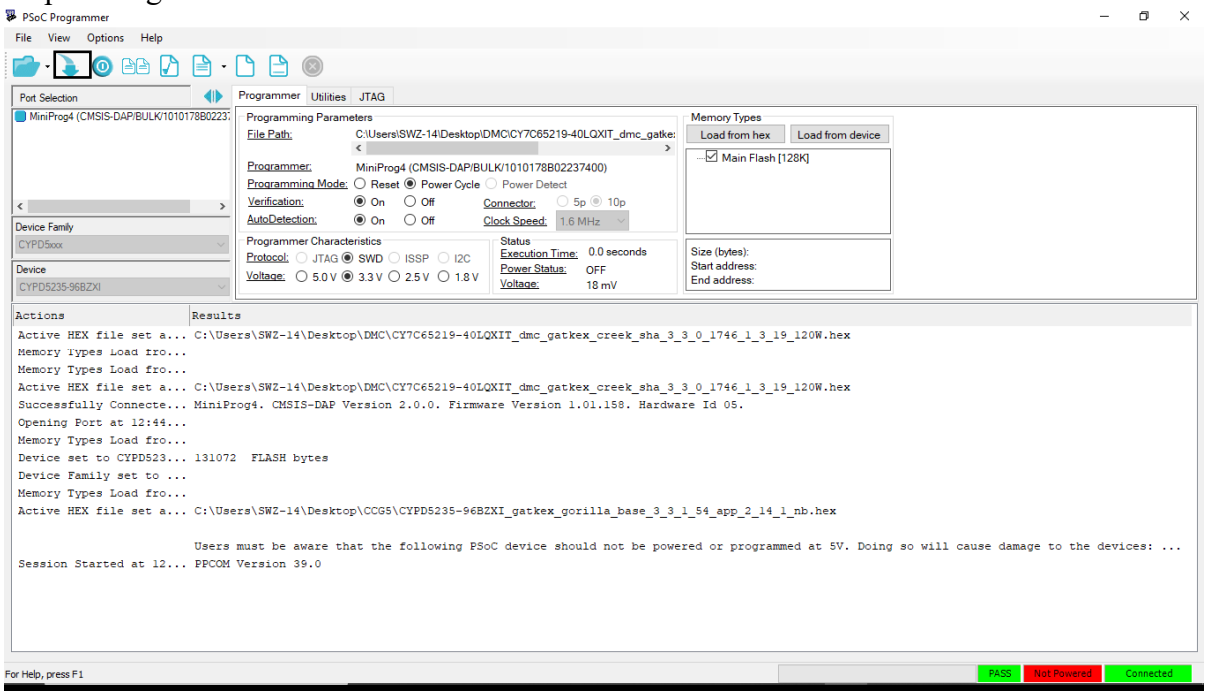


**Figure 29: Select program on PSOC Programmer**

- Step 6: Wait until everything is PASS

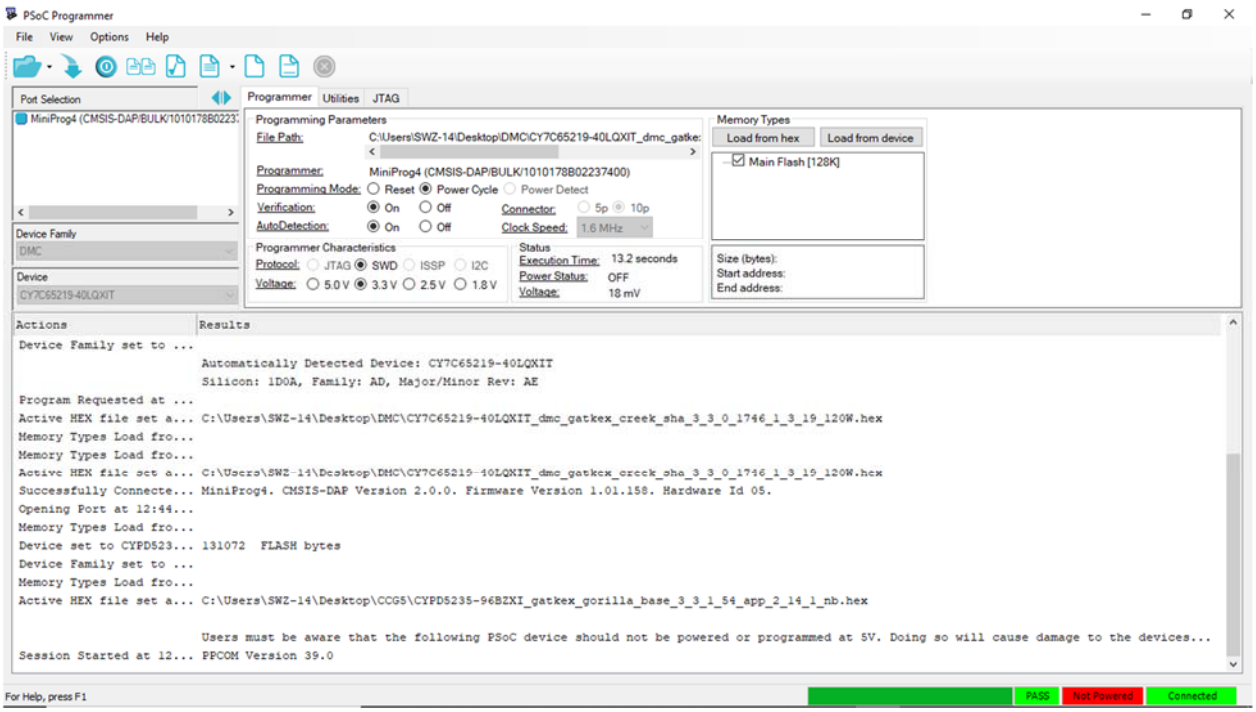


**Figure 30: Wait until everything is PASS**

Note: If you see FAIL message, you may get the connection wrong between Cypress MiniProg4 and DMC header→ Check connection again at Step 2

If connection between Cypress MiniProg4 and DMC header are correct but still get FAIL message→Close **PSOC Programmer** application and detach/attach MiniProg4 to host and reopen **PSOC Programmer**.

## 7. Cypress CCG5 FW Update

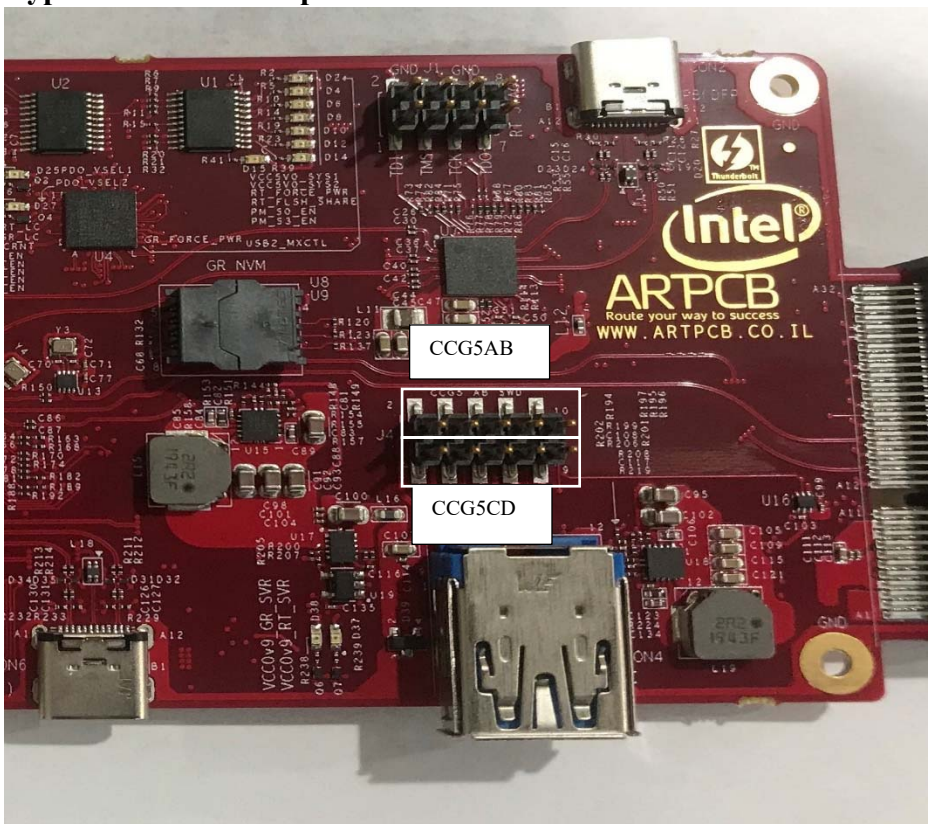


**Figure 31: CCG5 SWD (J4) Connector**

While Cypress MiniProg4 Program and Debug Kit CY8CKIT connected to the PC and Cypress PSOC programmer open:

**Update CCG5 AB:**

- Step 1: Connect Cypress MiniProg4 to first CCG5 AB (J4) connector

| Cypress Minipro4 Pin | Intel USB4 Evaluation Dock DMC Header Pin |
|---|---|
| SWDIO | Pin 10 |
| SWCLK | Pin 9 |
| XRES | Pin 8 |
| GND | Pin 7 |
| VTARG | Pin 6 |

-
- Step 2: Load file – CCG5 FW hex file
- Step 3: Program
- Step 4: Wait until everything is PASS

**Update CCG5 CD:**

- Step 1: Connect Cypress MiniProg4 to first CCG5 CD (J4) connector

| Cypress Minipro4 Pin | Intel USB4 Evaluation Dock DMC Header Pin |
|---|---|
| SWDIO | Pin 1 |
| SWCLK | Pin 2 |
| XRES | Pin 3 |
| GND | Pin 4 |
| VTARG | Pin 5 |

- Step 2: Load file – CCG5 FW hex file (the same file for CCG5 AB update)
- Step 3: Program
- Step 4: Wait until everything is PASS

Note: There is only 1 CCG5 file for CCG5 AB and CCG5 CD

Note: If you see FAIL message, you may get connection wrong between Cypress MiniProg4 and DMC header→ Check connection again at Step 1

If connection between Cypress MiniProg4 and DMC header are correct but still get FAIL message→Close **PSOC Programmer** application and detach/attach MiniProg4 to host and reopen **PSOC Programmer**.

- Step 5: Power Intel USB4 Evaluation Dock