Updating Firmware Images on the SLN-VIZN-IOT (RT106F) using J-LINK

Contents

This guide will cover the steps necessary to properly flash your SLN-VIZN-IOT kit using a J-Link. In this guide, we will cover flashing your kit using either MCUXpresso IDE or J-Link Commander.

If you already have MCUXpresso IDE installed, it is recommended that you follow the steps under **Using MCUXpresso** simply for the ease-of-use, however either option will work. If you would like to download MCUXpresso IDE, follow this link https://www.nxp.com/design/software/development-software/mcuxpresso-software-and-tools/mcuxpresso-integrated-development-environment-ide:MCUXpresso-IDE.

Prerequisites

It is assumed that you have either a **J-Link Plus** or **J-Link Ultra+** and have downloaded the latest **J-Link Software and Documentation Pack** from the SEGGER website here (v6.62 or greater) : https://www.segger.com/downloads/jlink/#J-LinkSoftwareAndDocumentationPack.

Additionally, it is assumed that you have access to an updated JLinkDevices.xml file with support for the "i.MXRT106FDVL6A" part number. This is true for any version of J-Link running v6.62 or greater.
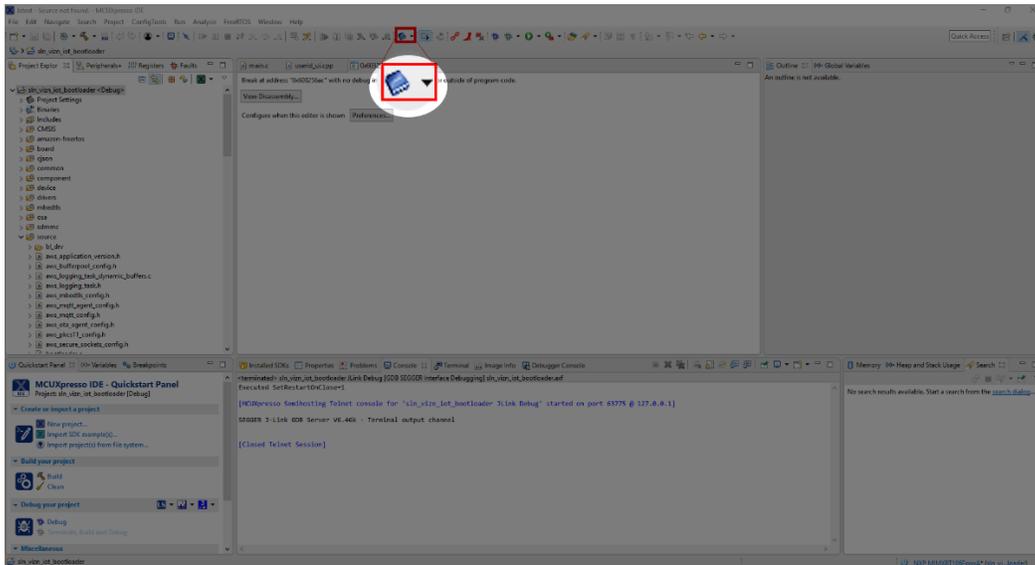
Setup

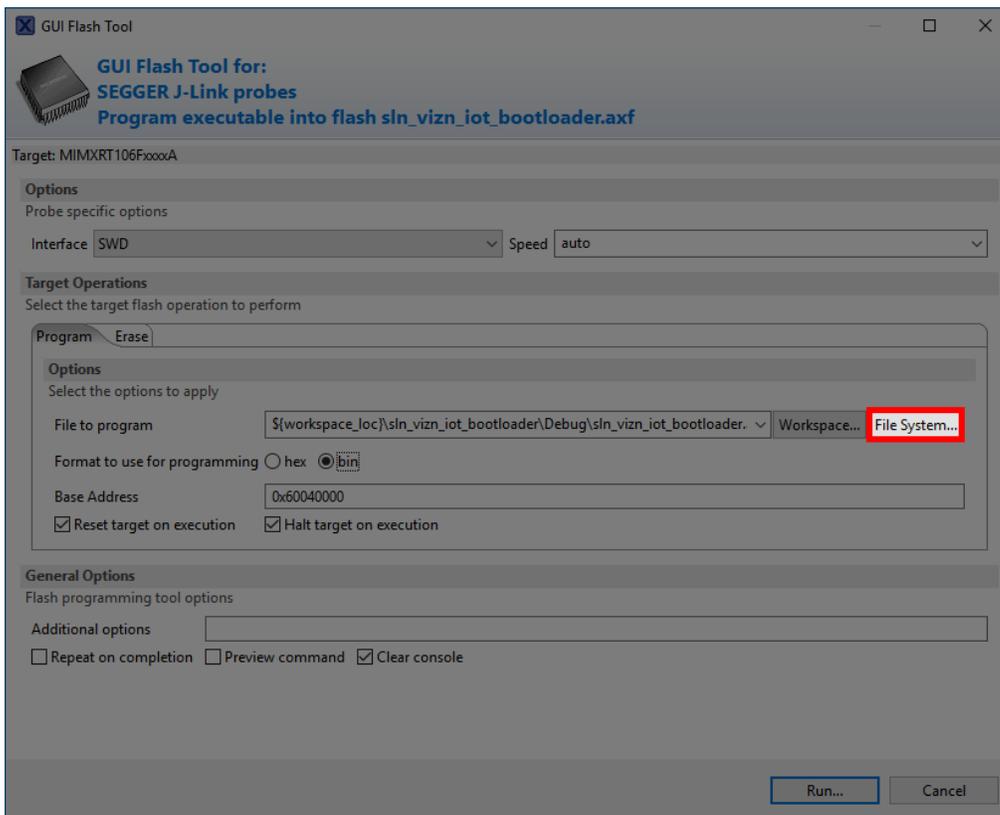Attach your **J-Link** debug probe into the header shown below.
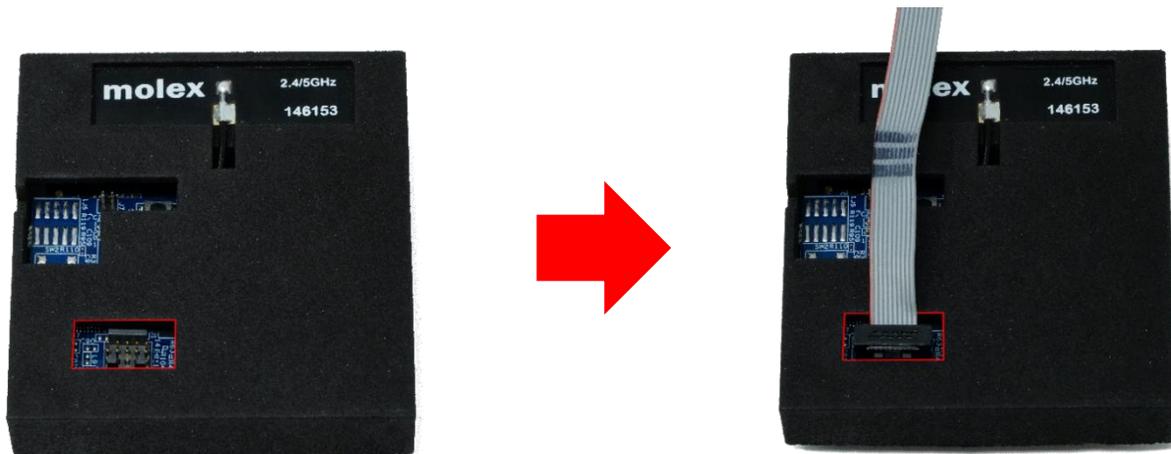
Using MCUXpresso:
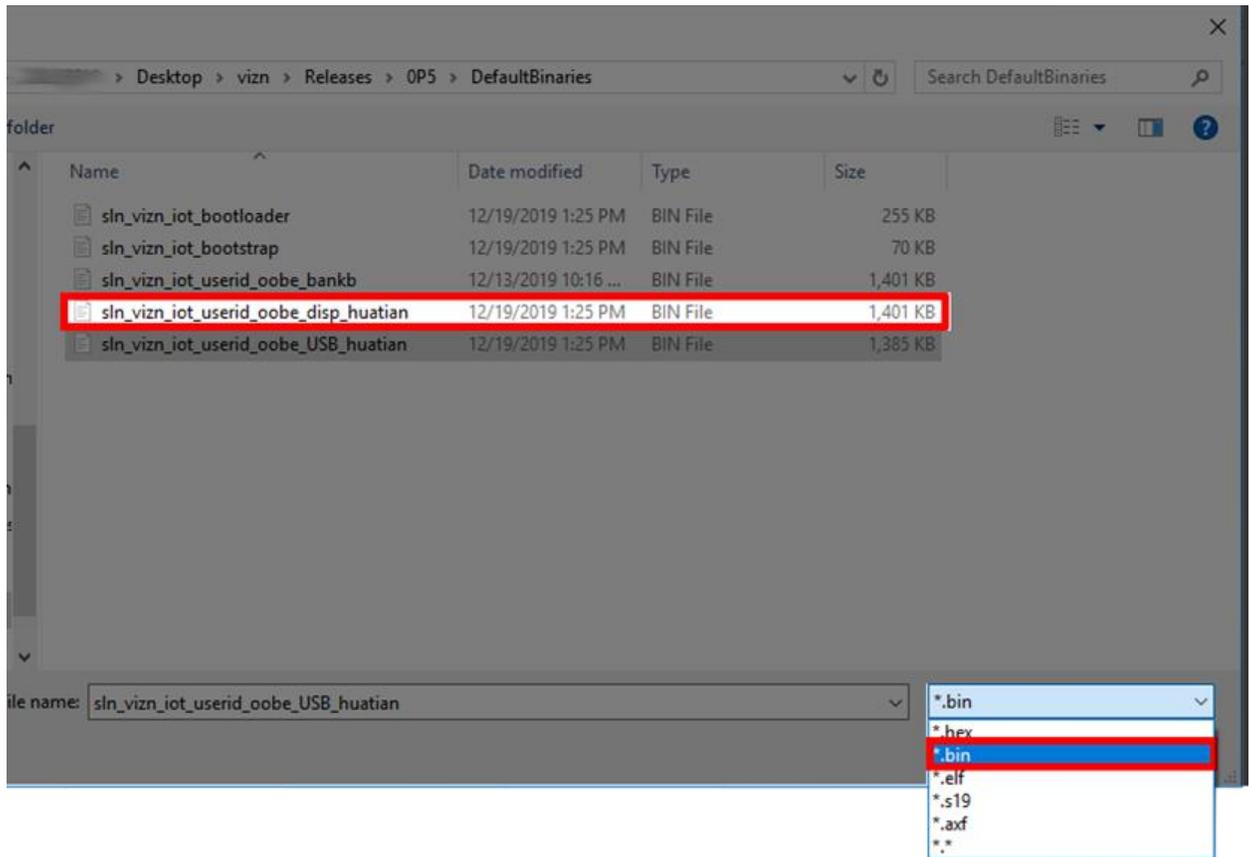
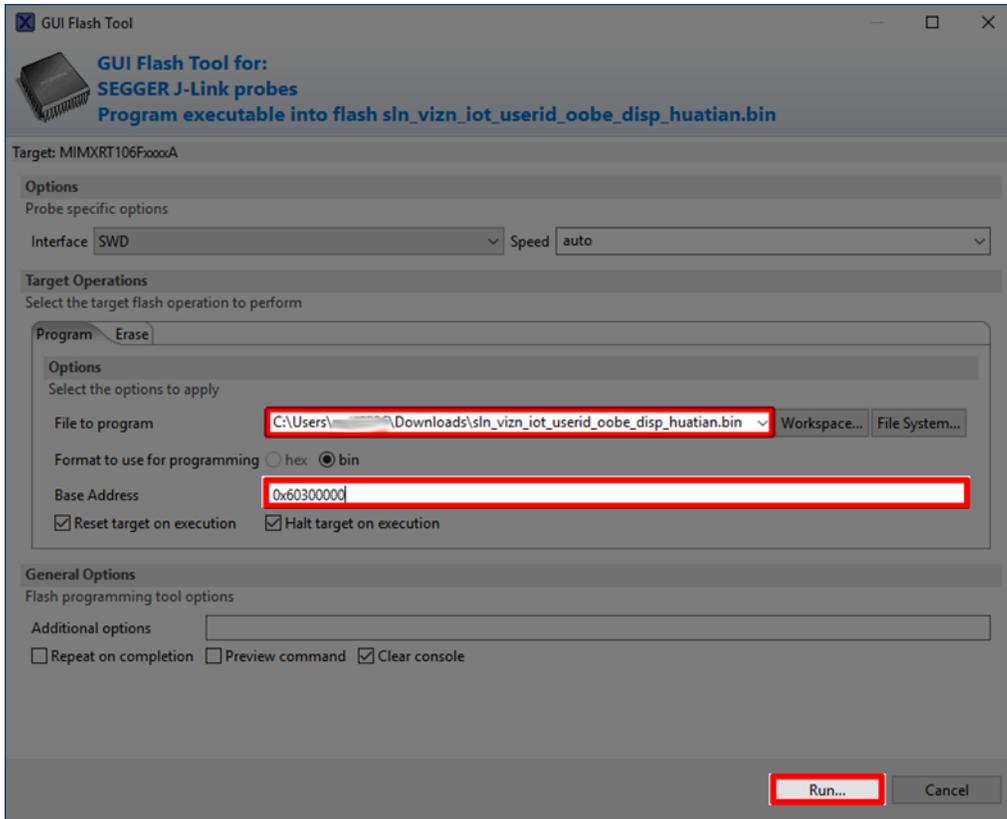1. Open MCUXpresso and click on the **GUI Flash Tool** icon:

2. Under the **GUI Flash Tool** window, select **File to Program -> File System**
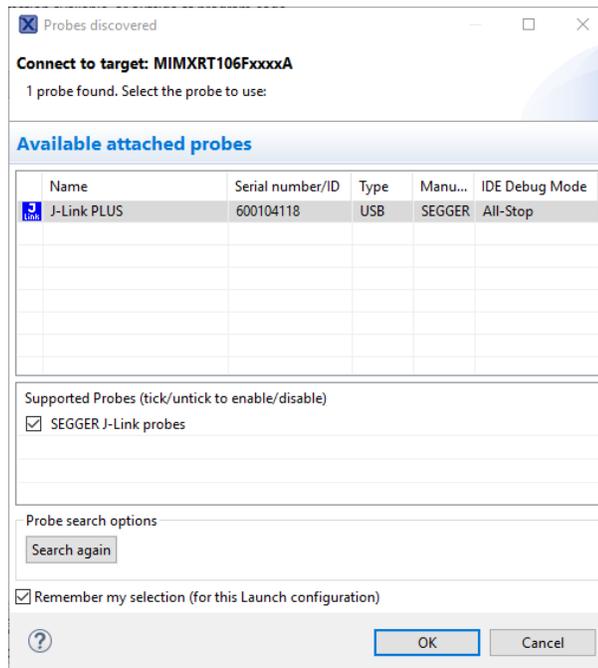
3. In the **File Explorer** window, change the window to show **".bin"** files using the drop-down menu and select the binary you want to flash. Click **OK** once the binary has been selected.
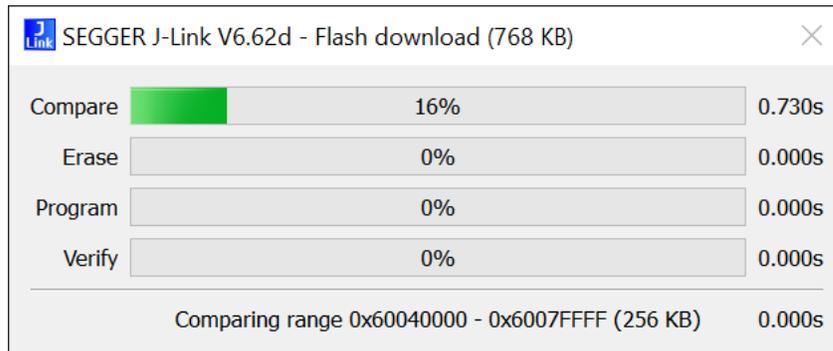

4. In the **GUI Flash Tool** window again, make sure that the binary you selected in the previous step is being shown next to **File to Program** and set the base address to 0x60300000. Once these two fields are properly filled in, click **Run**.

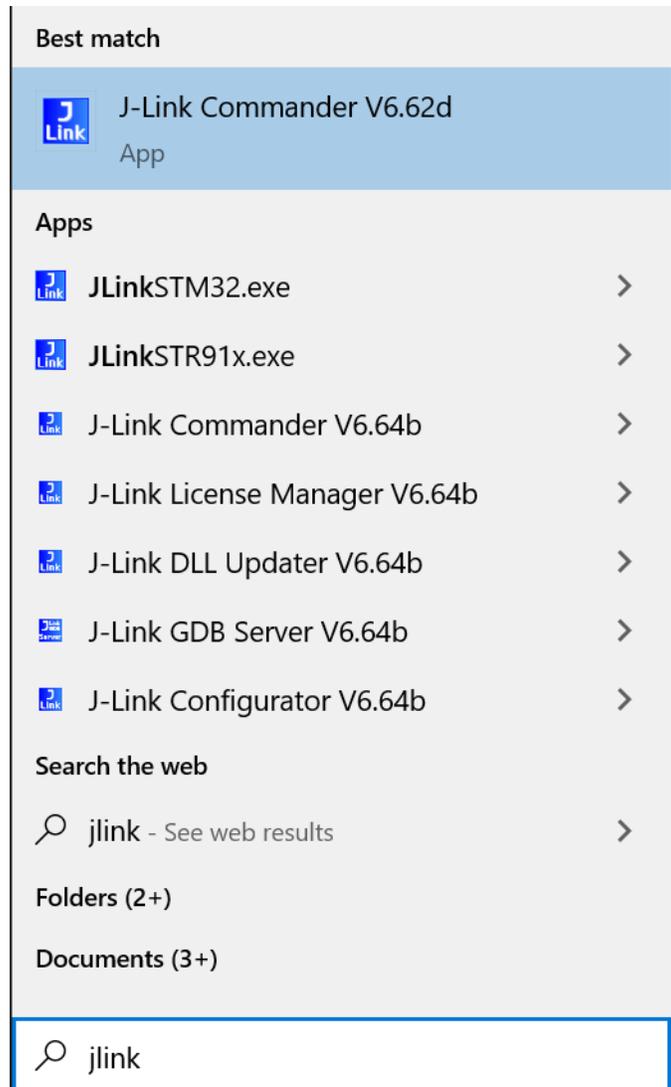5. Select the **J-Link** probe connected to your SLN-VIZN-IOT and click **OK.**

6. You will see a dialog like the following which indicates that your binary is being flashed. Once complete, your kit is ready to go.

Using J-Link Commander

1. Open **J-Link** Commander (v6.62 or greater).

2. Type the command **"connect"**

3. Use the default device **(MIMXRT106FDVL6A)** by pressing the **Enter** key at the "**Device>**" prompt.

4. Use **SWD** by typing **"s"** at the **"TIF>" prompt.**

5. Use the **default** target interface speed (**4000 kHz**) by pressing the **Enter** key at the **"Speed>"** prompt.

6. Upon success, you will receive the following output, indicating you are now connected:


If you do not see output like that shown above, try checking your J-Link connection to the kit and to the J-Link device itself. Additionally, make sure the "expansion" (top) board has not come loose from the RT106F (bottom) board.

Type the commands **"r"** followed by the command **"h"** in order to reset and halt the processor, respectively, to ensure that the kit may be flashed properly.

```
J-Link>r
Reset delay: 0 ms
Reset type NORMAL: Resets core & peripherals via SYSRESETREQ & VECTRESET bit.
Reset: Halt core after reset via DEMCR.VC_CORERESET.
Reset: Reset device via AIRCR.SYSRESETREQ.
J-Link>h
PC = 00202090, CycleCnt = 00000000
R0 = 00000000, R1 = 00000000, R2 = 00000000, R3 = 00000000
R4 = 00000000, R5 = 00000000, R6 = 00000000, R7 = 00000000
R8 = 00000000, R9 = 00000000, R10= 00000000, R11= 00000000
R12= 00000000
SP(R13)= 20201000, MSP= 20201000, PSP= 00000000, R14(LR) = FFFFFFFF
XPSR = 01000000: APSR = nzcvq, EPSR = 01000000, IPSR = 000 (NoException)
CFBP = 00000000, CONTROL = 00, FAULTMASK = 00, BASEPRI = 00, PRIMASK = 00

FPS0 = 00000000, FPS1 = 00000000, FPS2 = 00000000, FPS3 = 00000000
FPS4 = 00000000, FPS5 = 00000000, FPS6 = 00000000, FPS7 = 00000000
FPS8 = 00000000, FPS9 = 00000000, FPS10= 00000000, FPS11= 00000000
FPS12= 00000000, FPS13= 00000000, FPS14= 00000000, FPS15= FFFFFFFF
FPS16= 00000000, FPS17= 00000000, FPS18= 00000000, FPS19= 00000000
FPS20= 00000000, FPS21= 00000000, FPS22= 00000000, FPS23= 00000000
FPS24= 00000000, FPS25= 00000000, FPS26= 00000000, FPS27= 00000000
FPS28= 00000000, FPS29= 00000000, FPS30= 00000000, FPS31= FFFFFFFF
FPSCR= 00000000
J-Link>
```

7. Open **File Explorer** and click on the binary you intend to flash. Once highlighted, use "**Shift + Right Click**" to bring up an expanded context menu and click on the option to "**Copy as Path.**"
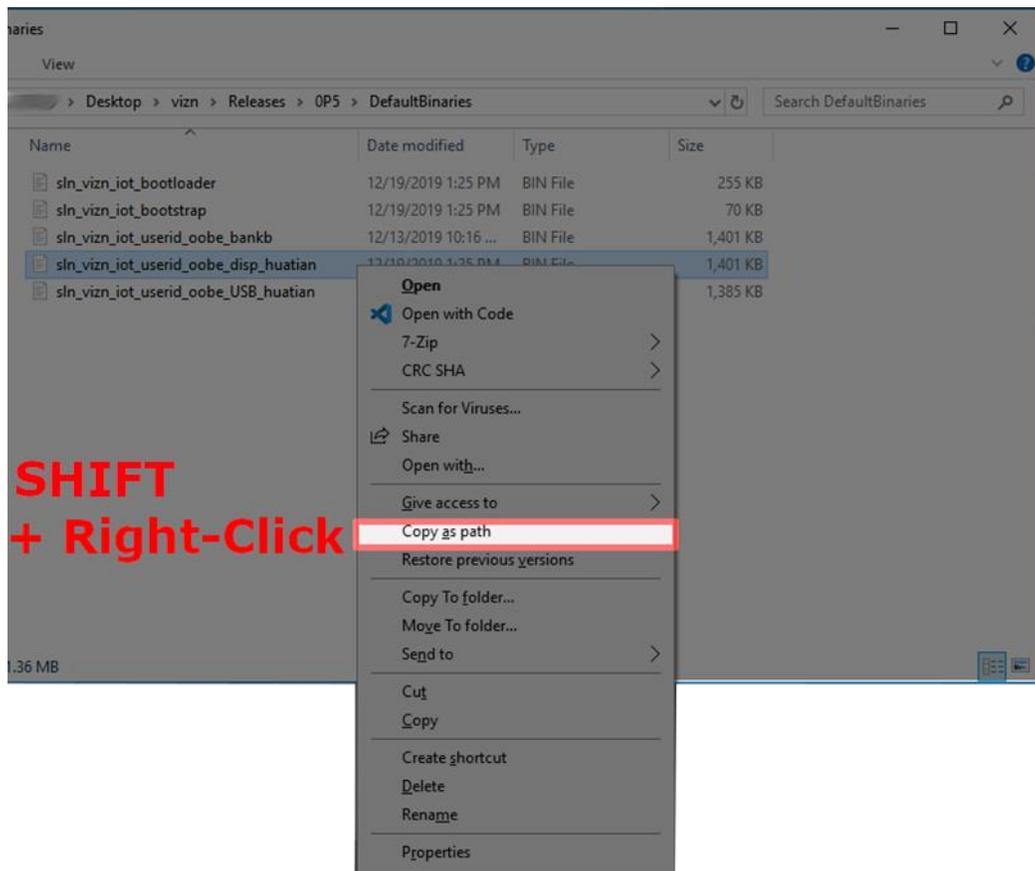
8. Use the command '**loadfile "PATH_TO_BINARY" 0x60300000**' to begin flashing the board. You will see a pop-up window like the following which indicates that the kit is being flashed.
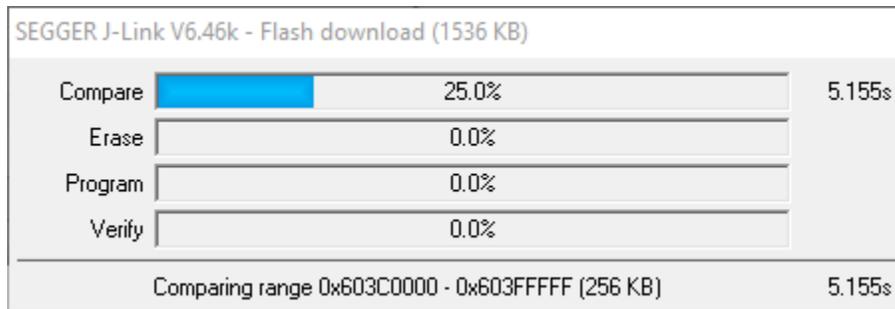
9. Once completed, you will receive the following output message in **J-Link Commander** indicating that the board was successfully flashed.
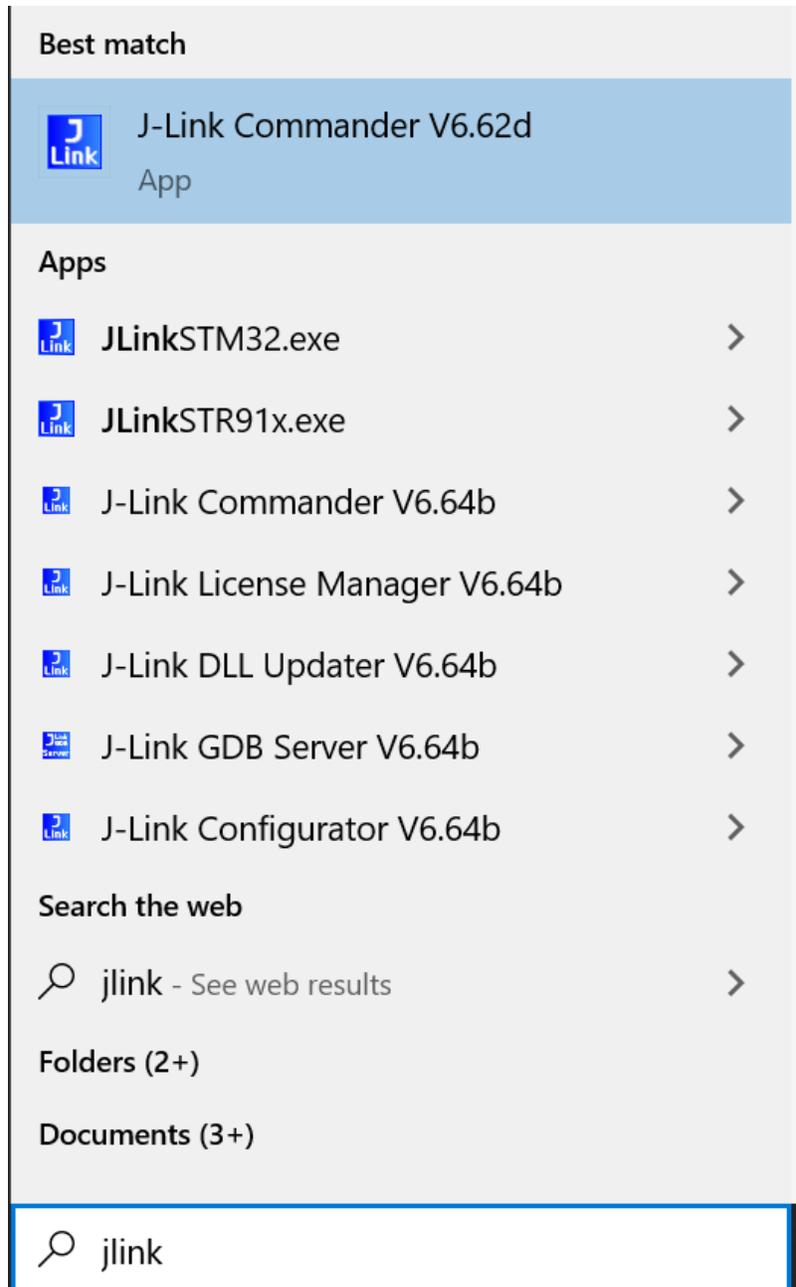

10. Power cycle your board to run your new firmware.

Erase All Flash Banks

There may be a scenario where you wish to perform a factory reset and go back to the default, stock binaries. In these scenarios, it can often be helpful to erase the entire flash of the SLN-VIZN-IOT kit just to be safe. This can be done using the same J-Link Commander application used in the previous section. The following steps will show the process of connecting to the SLN-VIZN-IOT using J-Link Commander and erasing all flash banks.

1. Open **J-Link** Commander (v6.62 or greater).

2. Type the command **"connect"**

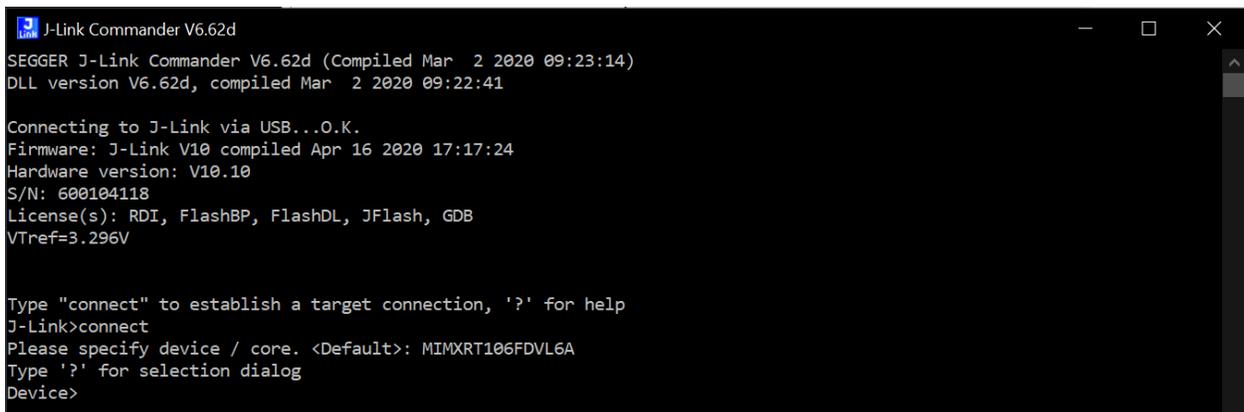3. Use the default device **(MIMXRT106FDVL6A)** by pressing the **Enter** key at the "**Device>**" prompt.

4. Use **SWD** by typing **"s"** at the **"TIF>" prompt.**

5. Use the **default** target interface speed (**4000 kHz**) by pressing the **Enter** key at the **"Speed>"** prompt.
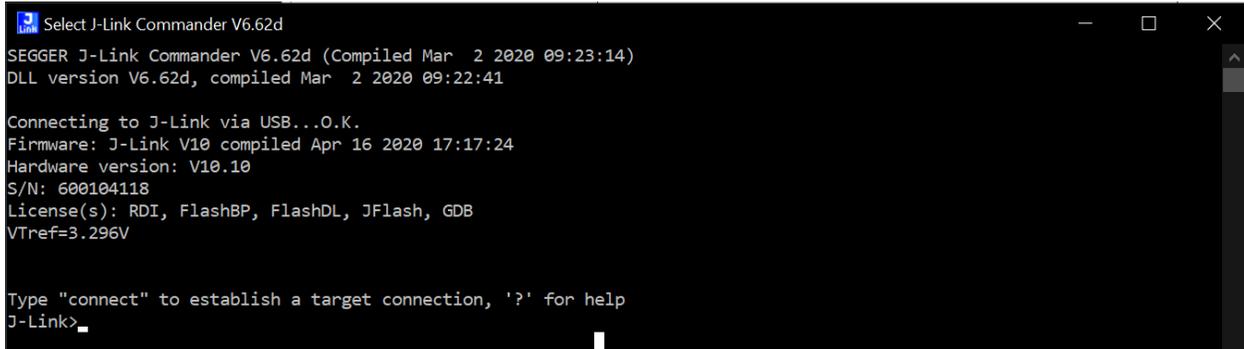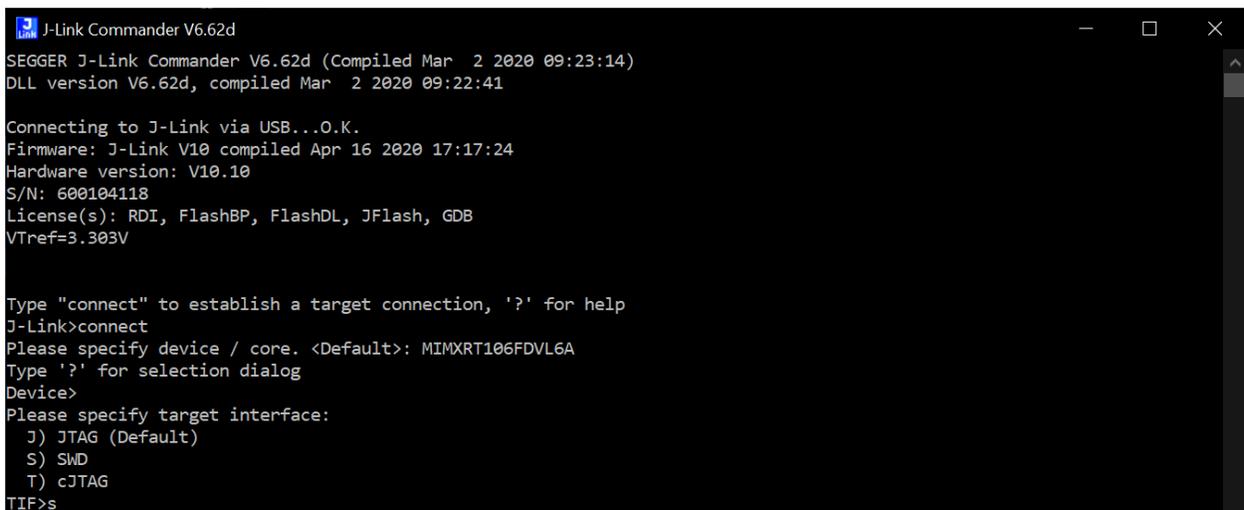


```
J-Link Commander V6.62d                                        —    □    ✕

SEGGER J-Link Commander V6.62d (Compiled Mar  2 2020 09:23:14)
DLL version V6.62d, compiled Mar  2 2020 09:22:41

Connecting to J-Link via USB...O.K.
Firmware: J-Link V10 compiled Apr 16 2020 17:17:24
Hardware version: V10.10
S/N: 600104118
License(s): RDI, FlashBP, FlashDL, JFlash, GDB
VTref=3.303V


Type "connect" to establish a target connection, '?' for help
J-Link>connect
Please specify device / core. <Default>: MIMXRT106FDVL6A
Type '?' for selection dialog
Device>
Please specify target interface:
  J) JTAG (Default)
  S) SWD
  T) cJTAG
TIF>s
Specify target interface speed [kHz]. <Default>: 4000 kHz
Speed>
```
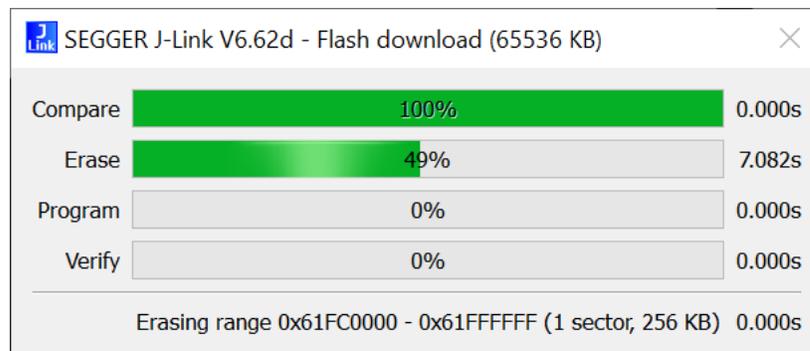
6. Type the command "**exec EnableEraseAllFlashBanks**" which will allow the J-Link to erase all the flash from the kit.


```
J-Link Commander V6.62d                                        —    □    ✕

J-Link>exec EnableEraseAllFlashBanks
J-Link>
```

7. Now, simply type the command "**erase**" to begin erasing the flash on the kit. After running the command, you should see a window like the following:


```
SEGGER J-Link V6.62d - Flash download (65536 KB)          ✕

 Compare   [         100%         ]   0.000s
   Erase   [         49%          ]   7.082s
 Program   [          0%          ]   0.000s
  Verify   [          0%          ]   0.000s

 Erasing range 0x61FC0000 - 0x61FFFFFF (1 sector, 256 KB)  0.000s
```

8. Upon success, you will receive output like the following:


```
J-Link Commander V6.62d                                        —    □    ✕

J-Link>exec EnableEraseAllFlashBanks
J-Link>erase
Erasing device...
J-Link: Flash download: Total time needed: 10.404s (Prepare: 0.069s, Compare: 0.000s, Erase: 10.331s, Program: 0.000s, V
erify: 0.000s, Restore: 0.003s)
Erasing done.
J-Link>
```