# GFI Firmware Update Manual

## EM357 USB Stick

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|---|---|
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# Document Control

### Revision History

| Revision Date | Summary of Changes | Changes Marked | Version Number |
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| 15/12/2017 | First version. | N/A | 1.0 |
| 15/12/2017 | Review and approval. | N/A | 1.0 |

### Reviewers

| Name | Title / Responsibility | Release Date | Version Number |
|---|---|---|---|
| Pedro Almeida | Critical Software Senior Engineer | N/A | 1.0 |
| Dinis Paes | Critical Software Technical Manager | N/A | 1.0 |

### Approvals

| Name | Signature | Title / Responsibility | Release Date | Version Number |
|---|---|---|---|---|
| Dinis Paes | | Critical Software Technical Manager | 15/12/2017 | 1.0 |

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# 1. Overview

These instructions explain the process to flash the bootloader and Network Co-Processor (NCP) of the EM357 USB Sticks (model ZM357S-USB) shown in Figure 1.

**Figure 1 - EM357 USB Stick**

Upgrading the stack firmware of EM357 USB Sticks requires that the USB stick is connected through the debug interface to a debug adapter using the ISA3 adapter shown in Figure 2 or the Wireless Starter Kit (WSKT) shown in Figure 3.

**Figure 2 - Using the ISA3**

**Figure 3 - Using the WSTK (BRD4001A)**

When using the WSTK mind that the flat cable must be connected to the ISA3 header as shown in Figure 4.

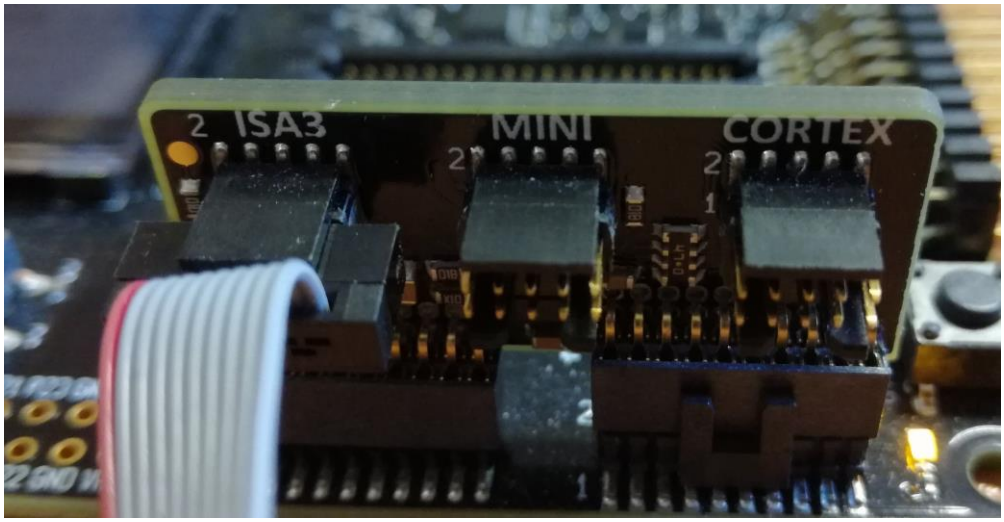


**Figure 4 - Flat cable connection to WSTK**

## 2. Firmware files

The firmware files consist of a bootloader image and an NCP image. These files are available through the GFI update server at the location below using the credentials provided by DCC:

https://gfi-update.criticalsoftware.com/firmware

At this location you will find one folder for each GFI version that introduced a change in the firmware. From these folders enter the one for your GFI target version or if that folder does not exist the folder for the most recent version before your target version. Inside this folder enter the folder EM357 to access the images.

The firmware files follow these naming conventions:

- For GFI 1.X:
  - bootloader-SingleBand.s37 – Bootloader image.
  - NCP-SingleBand.hex – NCP image (note the different file extension).
- For GFI 2.X:
  - bootloader-SingleBand.s37 – Bootloader image.
  - NCP-SingleBand.s37 – NCP image.

# 3. System Requirements

Table 1 presents the list of software components required to update the ZigBee stack for EM357 USB Sticks depending on the Debug Adapter used. When using the ISA3 Debug Adapter, the Simplicity Studio Simplicity Commander can be used but is not recommended.

| Debug Adapter | Software | Recommended version |
|---|---|---|
| ISA3 | ISA3 Utilities | 1.0.9 |
| | Simplicity Studio V4 – em3xx_load | 4.9.0.0 |
| | Simplicity Studio V4 – Simplicity Commander - not recommended | 0v25p3b281 |
| WSTK | Simplicity Studio V4 Simplicity Commander | 0v25p3b281 |

**Table 1 - System requirements**

# 4. Tools instructions

The following sections present the instructions for each of the software choices listed in Table 1.

## 4.1. ISA3 Utilities

Locate the em3xx_load.exe binary which in Microsoft Windows is usually at *"c:\Program Files (x86)\Silicon Labs\ISA3 Utilities\bin"* and execute the following commands:

```
cd "c:\Program Files (x86)\Silicon Labs\ISA3 Utilities\bin"
em3xx_load.exe --disablerdprot
em3xx_load.exe --erasewrprot
em3xx_load.exe --masserase
em3xx_load.exe c:\Downloads\bootloader-SingleBand.s37
em3xx_load.exe c:\Downloads\NCP-SingleBand.s37
```

**Note:** the full paths for the files NCP-SingleBand.s37 and bootloader-SingleBand.s37 must be used if the images are not in the same running directory.

## 4.2. Simplicity Studio V4 – em3xx_load

Locate the em3xx_load.exe binary which in Microsoft Windows is ususally at *"C:\SiliconLabs\SimplicityStudio\v4\developer\adapter_packs\em3xx\utils"* and execute the following commands:

```
cd "C:\SiliconLabs\SimplicityStudio\v4\developer\adapter_packs\em3xx\utils"
em3xx_load.exe --disablerdprot
em3xx_load.exe --erasewrprot
em3xx_load.exe --masserase
em3xx_load.exe c:\Downloads\bootloader-SingleBand.s37
em3xx_load.exe c:\Downloads\NCP-SingleBand.s37
```

**Note:** the full paths for the files NCP-SingleBand.s37 and bootloader-SingleBand.s37 must be used if the images are not in the same running directory.

## 4.3. Simplicity Studio V4 – Simplicity Commander

In the Simplicity Studio open the Simplicity Commander tool as shown in Figure 5.

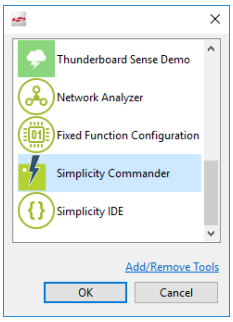


**Figure 5 - Opening the Simplicity Commander tool**

At the Simplicity Commander window connect to the target EM357 USB:

1. Connect to the adapter. The respective button should show “Disconnect” after a successful connection.
2. Connect to the target. The respective button should show “Reconnect” after a successful connection.
3. With the“Kit” settings selected as shown in Figure 6, Simplicity Commander should show the MCU chip type detected as EM357.

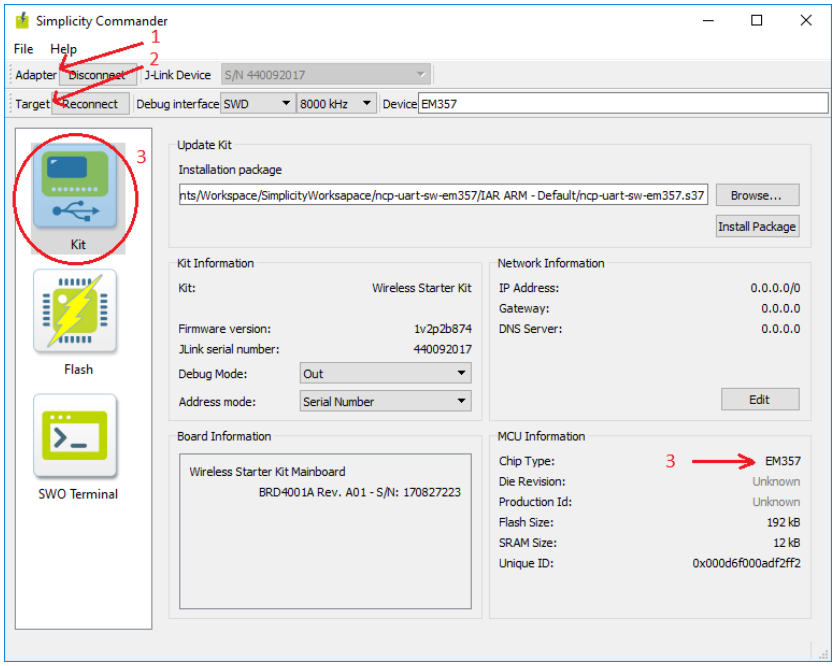


**Figure 6 - Connecting to the target**

Selecting the “Flash” settings as shown in Figure 7 is now possible to flash the firmware to the USB Stick flash memory. The flash memory shall be erased before flashing the new firmware:

1. Click the button “Erase chip” to erase previous installed firmwares.
2. Using the “Browse” button locate the bootloader image
3. Use the “Flash” button to start the flash process.

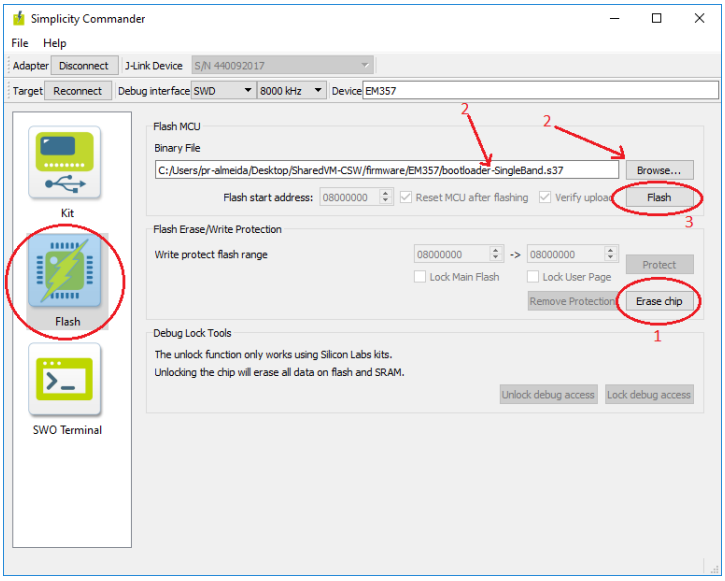


**Figure 7 - Flashing the bootloader**

After flashing the bootloader, flash the NCP image as shown in Figure 8, but <u>do not</u> erase the chip this time:

1. Using the “Browse” button locate the NCP image
2. Use the “Flash” button to start the flash process.

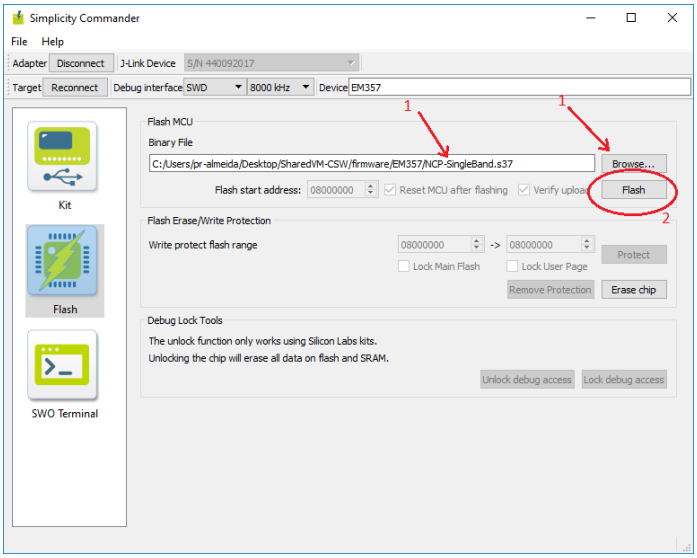


**Figure 8 - Flashing the NCP**