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Upgrading M8 Firmware

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Overview

When new features are added to the M8 Radio Modem Module, some users elect to try these on hardware they already have on hand rather than ordering units with the new firmware. Unless otherwise noted in the Release Notes, field-upgrade of the M8 firmware is supported.

This Application Note details the upgrade process for all M8 products (including the M8T, M8R and M8S). It also provides a basic procedure that can be used to upgrade a small quantity of M8 radios.

Entering Boot Loader Mode

At first power-on, M8 radios may either boot normally or enter the boot loader for a firmware upgrade. To enter the boot loader, pin 12 of the I/O connector should be tied to pin 18 of the same connector while power is applied. These pins are the 3.3V Out and Stat 2 signals, respectively. Stat 2 is normally an output pin, but it is safe to force it to 3.3V. Alternatively, an external 3.3V supply can be used rather than the M8's own 3.3V output. When driving Stat 2 to 3.3V, the TX/RX light on the modem will illuminate red.

After 5ms, it will be possible to communicate with the M8 boot loader using the protocol outlined below. Once the boot loader has started, it is no longer necessary to drive Stat 2 to 3.3V.

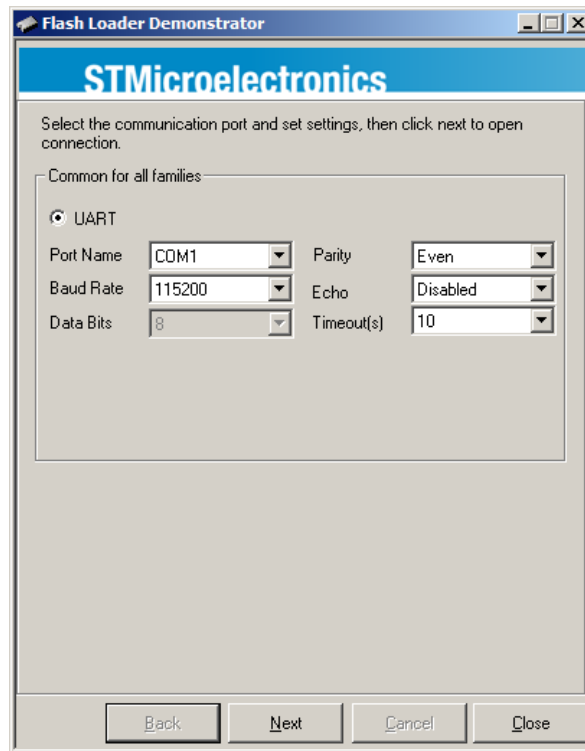
Boot Loader Protocol

The M8 uses the standard STM32 UART boot loader. The protocol is documented in ST Microelectronics [AN3155](#). An open-source project, [stm32flash](#), has an implementation of this protocol available.

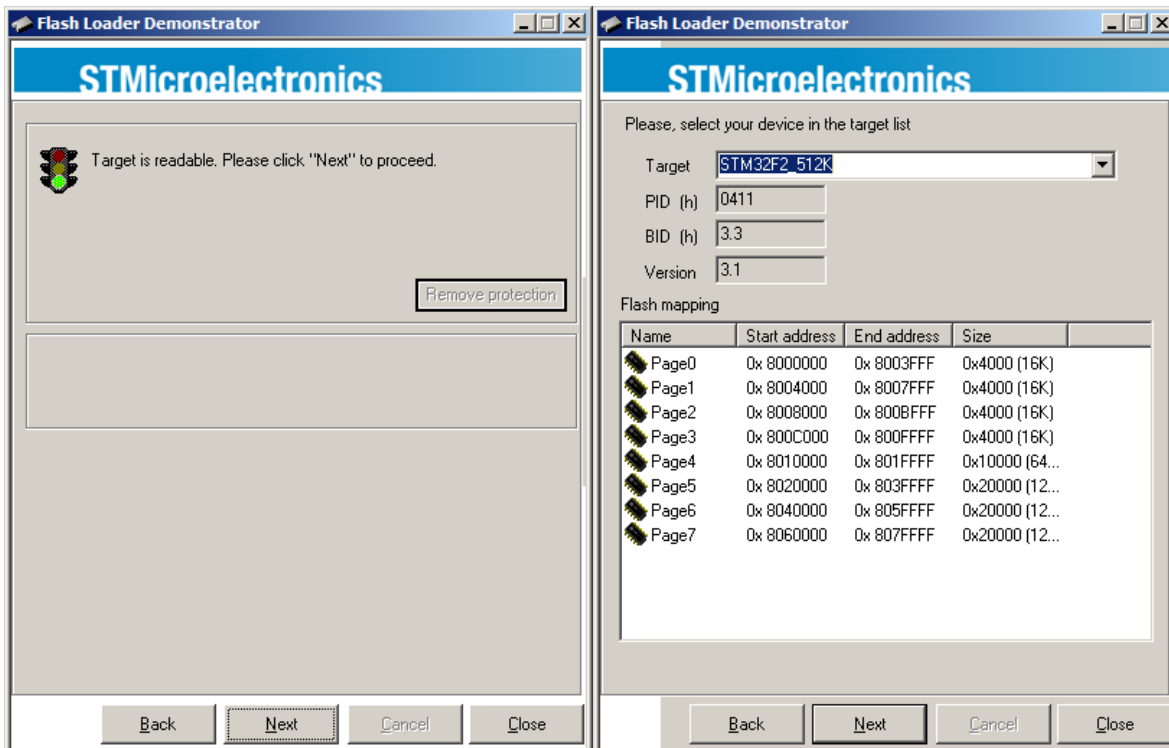
Upgrading Firmware Using a PC

If upgrading radios by hand, a number of utilities are available to perform the upgrade using a PC. This procedure will use the [Flash Loader Demonstrator](#), provided by ST Microelectronics to show the features of the boot loader.

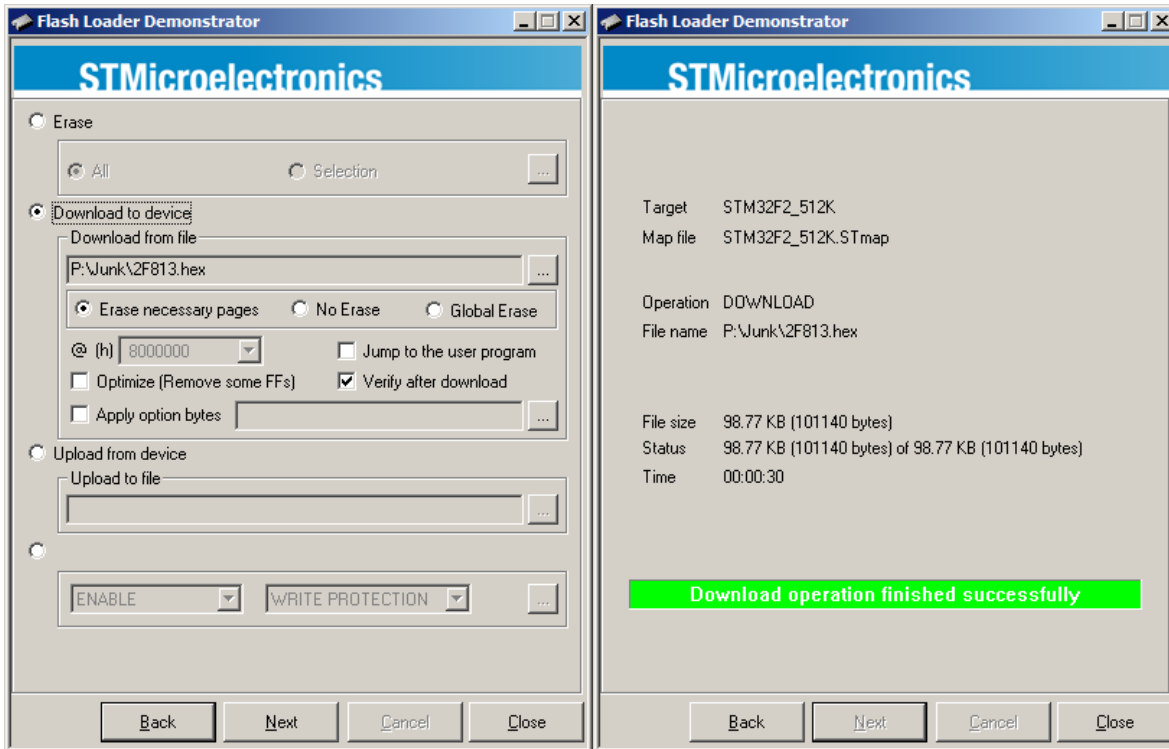
To start, enter boot loader mode as described in the section above. Afterwards, start the Flash Loader Demonstrator. The following screen will appear:



Select the serial port connected to the M8 and leave the other options at their default value. Click Next. The screen below should appear. If instead an error is shown, check wiring and ensure no lights are flashing on the M8. If lights are flashing, it is an indication that the boot loader was not correctly entered.



Click Next again. On the screen that appears, select “STM32F2_512K” and click Next.



Choose the “Download to device” option and then select a Hex file. Ensure options are selected as shown. Click Next. The download will initiate. After about 30 seconds (but sometimes up to 2 minutes), the operation will complete and the “Download successful” display will be shown. At this point, the firmware has been successfully loaded and the modem will run the new version of firmware once power is cycled.

If another device is to be programmed, it is not necessary to close this software. Simply select “Back” until the Communication Settings screen is shown again and re-run this procedure from the beginning.

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