
SP1ML modules getting started guide FW upgrade & simple communication setup

Introduction

This document is a quick user guide explaining how to upgrade the FW in ST sub-GHz modules SP1ML-868 and SP1ML-915 (hereafter referred to as SP1ML), and evaluation tools STEVAL-SP1ML868 and STEVAL-SP1ML915 (hereafter referred to as STEVAL-SP1ML).

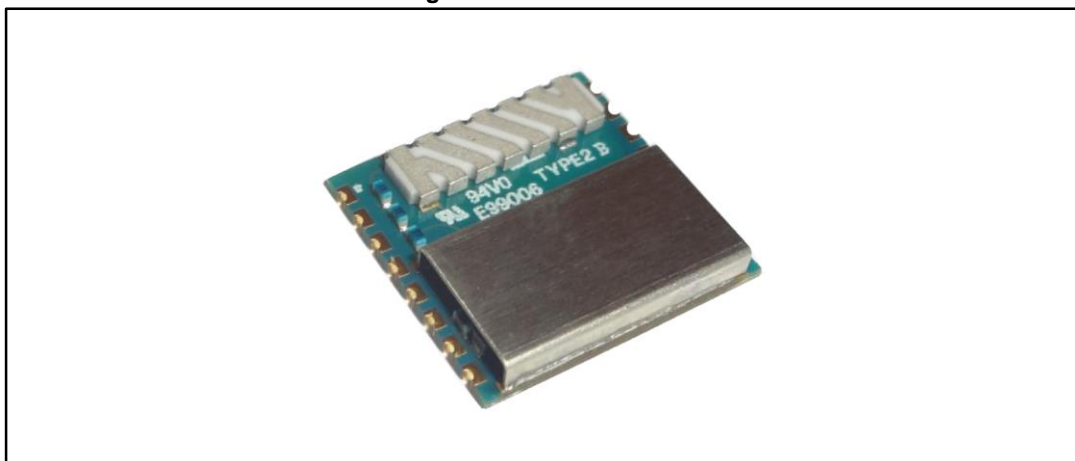
It also provides a possible setup to quickly establish communication between two modules using AT commands.

The SP1ML-868 and SP1ML-915 are complete RF modules based on the SPIRIT1 transceiver with integrated voltage regulation, antenna, crystal and STM32L1 microcontroller, in a compact surface-mount module form-factor.

The UART host interface allows simple connection to an external microcontroller.

Access to module features is provided through an extended AT command set.

Figure 1: SP1ML module



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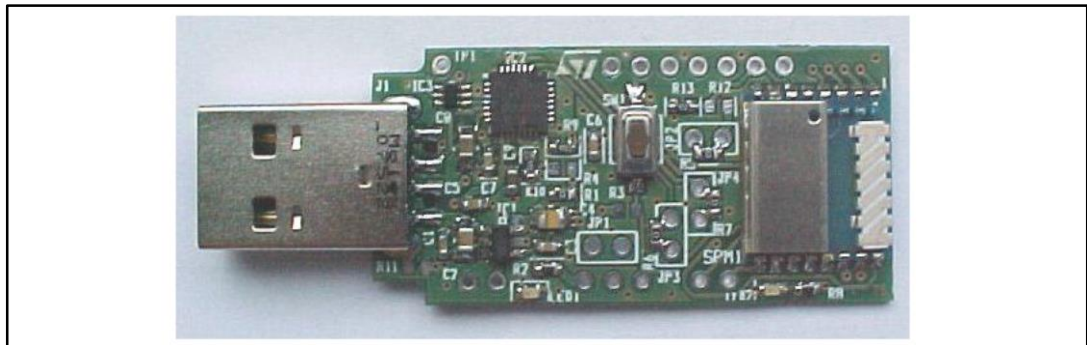
1 SP1ML firmware upgrade

When receiving SP1ML or STEVAL-SP1ML samples, the user should ensure that they have the latest version of the FW (available on request).

Hardware

- STEVAL-SP1ML evaluation board
- or
- SP1ML module (wired with USB/UART converter)

Figure 2: STEVAL-SP1ML



Software

- Download "CP210x USB to UART Bridge VCP Drivers" (STEVAL-SP1ML is using CP2102 USB/UART converter, so driver must be installed)
- Install the ST Flash loader demonstrator: www.st.com/stm32-flash-loader
- Ensure that you have the latest SP1ML FW from ST

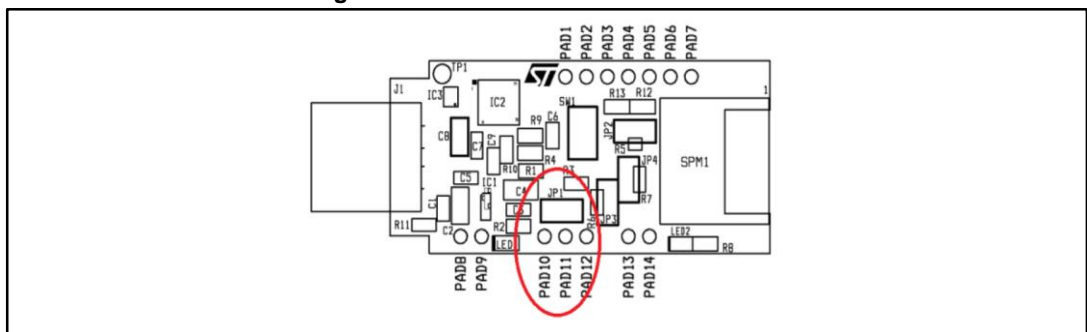
Documentation

- Ensure that you have the latest version of the SP1ML datasheet (including AT command set) and STEVAL-SP1ML data brief available on st.com (www.st.com/subghzmodules).

Settings

- In order to force boot mode, the boot0 pin must be set to "1". On the STEVAL-SP1ML it can be achieved through JP1 or by connecting PAD10 and PAD11 together.

Figure 3: STEVAL-SP1ML JP1 connector

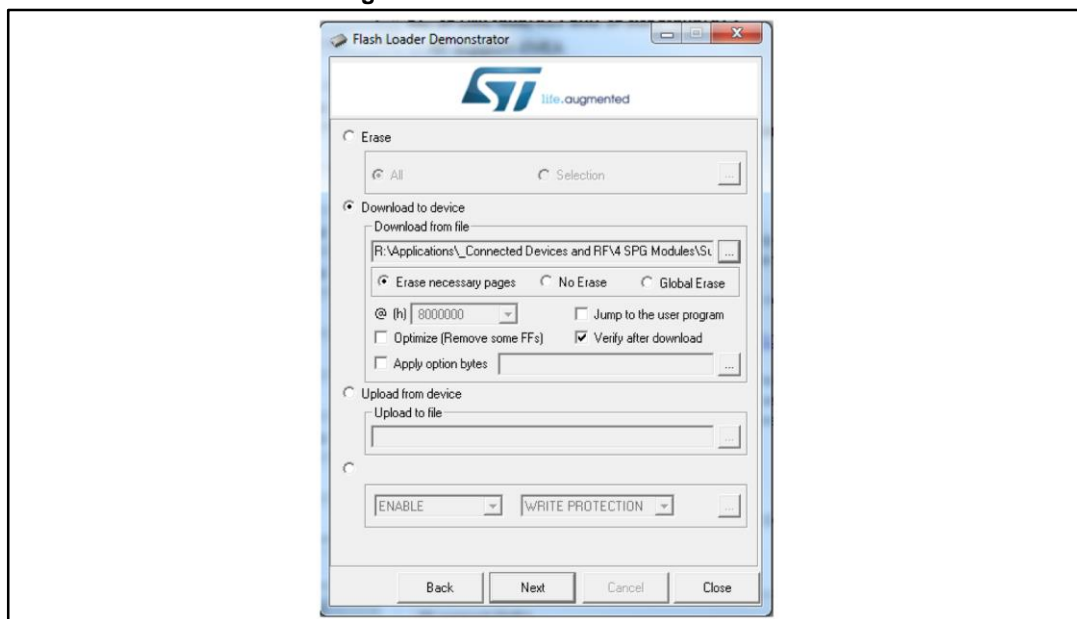


Flash loader configuration

- Select the COM port associated with CP2102
- Baud rate 115200
- Select target: STM32L_Med-density-128K
- Download address must be set to 0x8000000

FW upgrade

- Reset the module (or plug in the STEVAL-SP1ML) with the boot0 pin set to “1”
- Launch the FW upgrade procedure using the Flash loader settings described above.

Figure 4: Flash loader demonstrator

2 Set up quick data exchange between two SP1ML modules

Settings

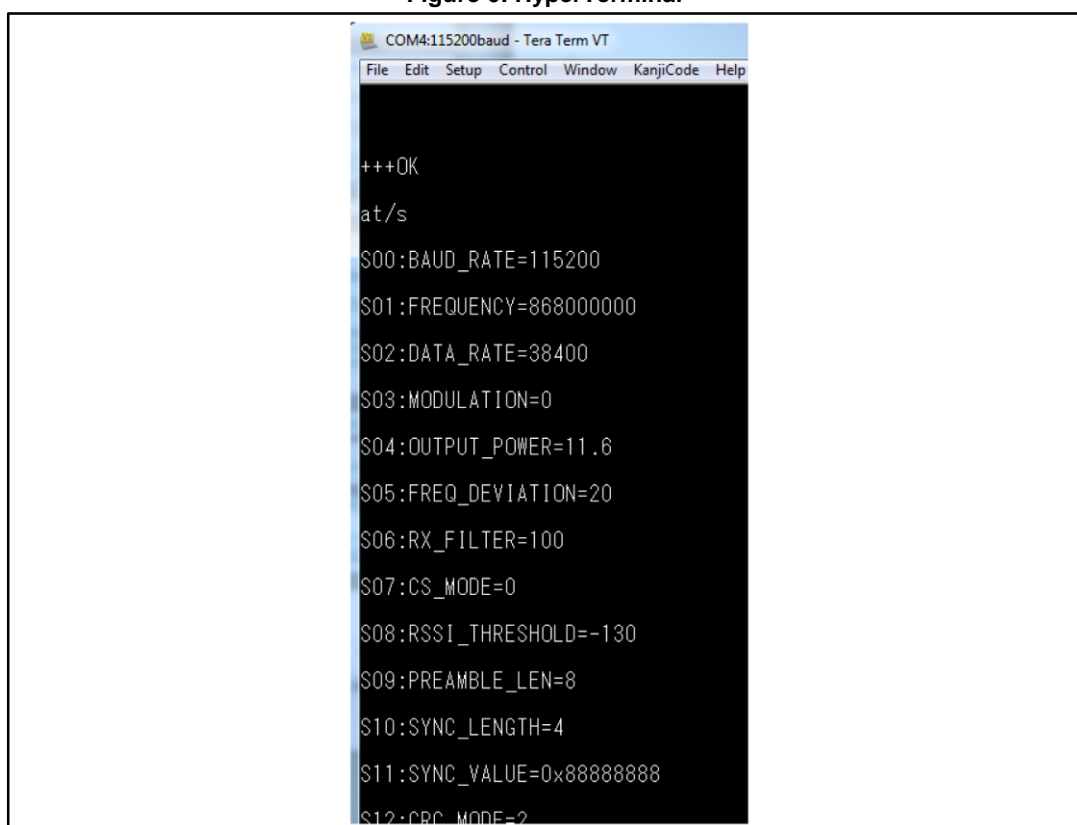
- Connect two dongles to the PC USB port
- Open 2 HyperTerminal sessions on the PC and connect to each dongle with associated COM port (115200 Baud rate, local echo, CR+LF for Tx/Rx)
 - By default the serial port settings are:
 - Bit per second: 115200
 - Data bits: 8
 - Parity: None
 - Stop bits: 1
 - Flow Control: None

Figure 5: Serial port settings

A screenshot of a serial port configuration window. It contains five dropdown menus arranged vertically. The first menu is labeled 'Bits per second:' and is set to '115200'. The second menu is labeled 'Data bits:' and is set to '8'. The third menu is labeled 'Parity:' and is set to 'None'. The fourth menu is labeled 'Stop bits:' and is set to '1'. The fifth menu is labeled 'Flow control:' and is set to 'None'. The entire window is enclosed in a thin black border.

- By default, the module is in operation mode. In order to move it in command mode, the “+++” escape sequence must be used
- Using the “AT/S” command will then provide the module setting list
- Please refer to the command list provided in the SP1ML datasheet

Figure 6: HyperTerminal



As an example, you can keep the default setting for each module, except:

Dongle/Module1

- S15 should be set to 0x00 (using HyperTerminal write ATS15=0x00)
- S16 should be set to 0x01 (using HyperTerminal write ATS16=0x01)
- Then send AT/C to store settings and ATO to move into operation mode

Dongle/Module2

- S15 should be set to 0x01 (using HyperTerminal write ATS15=0x01)
- S16 should be set to 0x00 (using HyperTerminal write ATS16=0x00)
- Then send AT/C to store settings and ATO to move into operation mode

Data exchange/cable replacement

- Now each module is in operating mode
- Any data written in HyperTerminal 1 (Dongle/Module1) will be received in HyperTerminal 2 (Dongle/Module2).
- Any data written in HyperTerminal 2 (Dongle/Module2) will be received in HyperTerminal 1 (Dongle/Module1).

3 Revision history

Table 1: Document revision history

Date	Revision	Changes
24-Apr-2015	1	Initial release.
13-Jun-2016	2	Added: Figure 5: "Serial port settings" .

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