Application Note

DA1458x/68x Development Kit J-Link Interface

AN-B-052

Abstract

Some DA1458x/68x development kits include a SEGGER J-Link device for managing the Bluetooth low energy SoC processor. This document provides a troubleshooting guide for users who are experiencing problems with the DK operation after updating the embedded J-Link firmware.

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1 Terms and Definitions

CIB	Communication Interface Board
DK	Development Kit
MCU	Microcontroller Unit
USB	Universal Serial Bus
SWD	Serial Wire Debug
Tx	Transmit (UART signal)
VCOM	Virtual COM (port)

2 References

N/A

3 Introduction

Some of the Dialog Semiconductor development kits embed a SEGGER J-Link device which allows to comprehensively manage the processor unit of the DA1458x/68x products.

The J-Link device is used as bridge from its USB interface to the microcontroller Serial Wire Debug (SWD) interface. On some development kits, it is also used to provide a Virtual COM (VCOM) port to the MCU.

After an automated update process of the J-Link firmware the boards may start to malfunction. This document intends to provide a troubleshooting guide for users who are experiencing issues with the SDK operation.

4 VCOM Port Not Available

The SEGGER Virtual COM port is factory enabled by default. During software upgrade or by user configuration, it can be disabled. If the SEGGER driver is properly installed but the VCOM does not show up in the device manager, it is most probably disabled by software. Please follow the procedure below to (re)enable the VCOM port.

4.1 Affected Devices

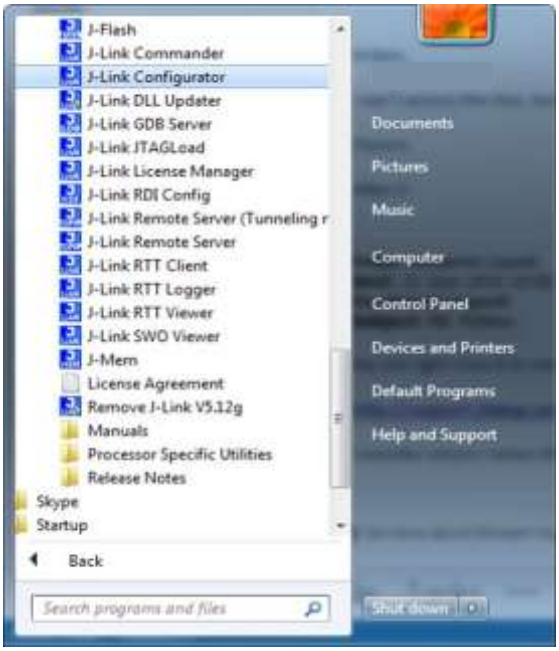
- DA1458x Basic DKs
- DA1468x/DA1510x (OpenThread Sandbox HDK) Basic DKs
- CIB
- DA14580 USB dongle

4.2 Installing J-Link

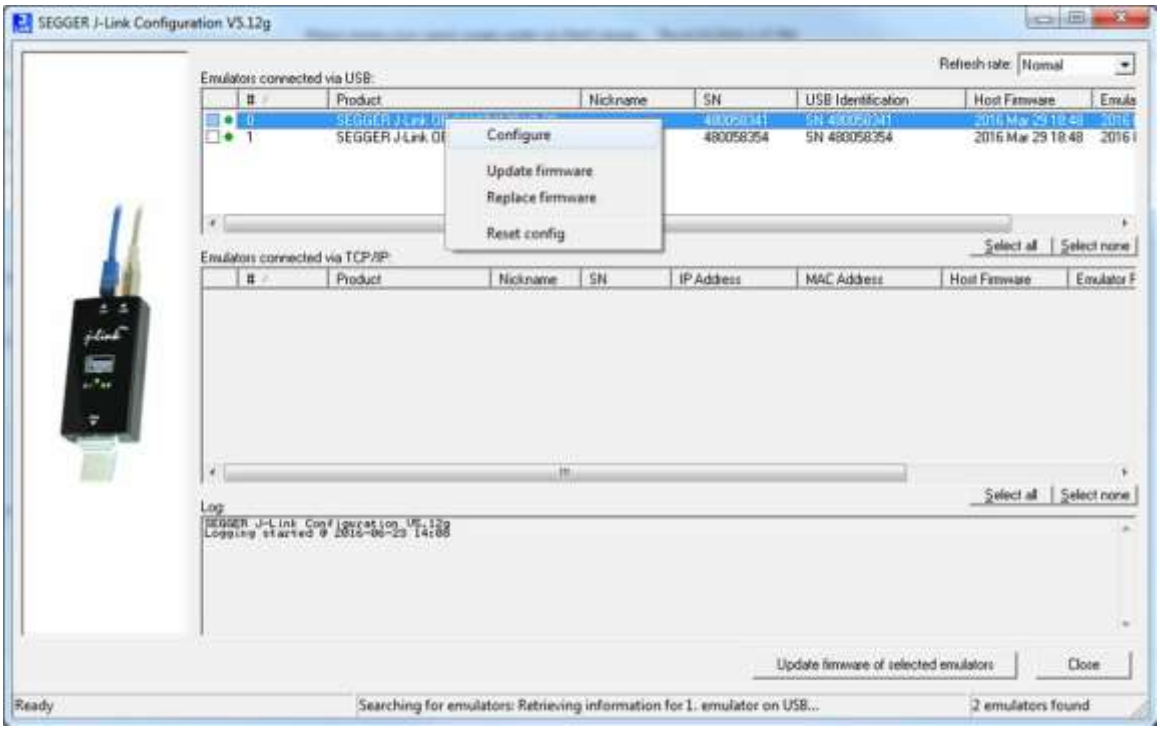
If not already done, please download and install SEGGER J-Link software and Documentation pack. The software package can be found on https://www.segger.com/downloads/jlink.

4.3 Enabling the VCOM port

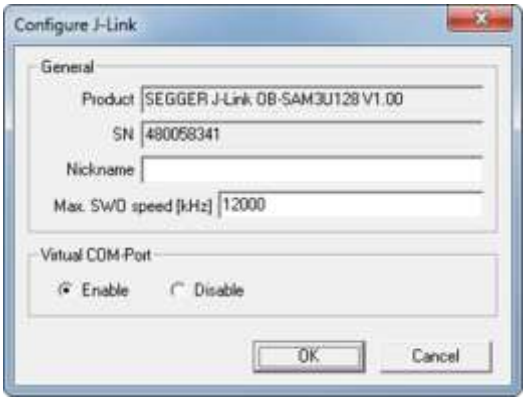
1. Launch the J-Link Configurator on the PC via menu Start > All Programs.



2. Right-click on the connected USB device and select *Configure*.



3. Select *Enable* in the Virtual COM port.



4. Power cycle the development kit.

5 Enabling/Disabling Hardware Flow Control

The factory setting for the VCOM port is to run without hardware flow control. Some J-Link firmware comes with flow control enabled by default. This section describes how to enable/disable the flow control.

5.1 Affected Devices

- DA1458x Basic DKs
- DA1468x/DA1510x (OpenThread Sandbox HDK) Basic DKs
- CIB
- DA14580 USB dongle

5.2 Flow Control Management

The hardware flow control (RTS/CTS) configuration can be changed via the J-link commander using the following commands:

- `wconf 88 01`: Enable RTS/CTS
- `wconf 88 FF`: Disable RTS/CTS

Power cycle the device after changing the configuration bytes.

6 Booting Troubles

In certain specific use cases, and on a development kit using the J-Link Virtual COM port feature, it is possible that a behavioral change of J-Link affects the BootROM and potentially also the application.

6.1 Problem Description

Starting with J-Link firmware Revision 5.10a SEGGER changed the behavior of the UART Tx pin on the SAM3U VCOM port. By default this pin is not driven at power up anymore. The J-Link will start to drive as soon as the COM port is open on the host side.

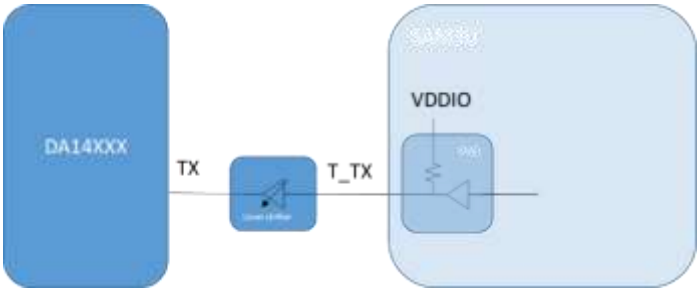


Figure 1: VCOM - Tx Pin Driving

When the VCOM pin is not driven but pulled up, the drive is not sufficient to lock the level shifter which result in a floating pin at the DA1458x/68x. This pin will most likely be pulled down.

6.2 Impact

- After initial power-up, the boot ROM might fail to proceed when a break (extended low level) is detected on the UART interface.
- When running the application, the application might be troubled by an unexpected break on the UART.

6.3 Solutions

The most simple solution is to open the COM port from the host. This will ensure that the Tx pin is driven high.

It is also possible to restore the original behavior of the SAM3U. To achieve this please follow the procedure described below:

1. Download the latest J-Link software version (6.12i or higher) from https://www.segger.com/jlink-software.html).
2. Start J-Link Commander --> Confirm the firmware update.
3. Enter command `wconf 0x8E 0xFB` in order to change the TX drive behavior.
4. Optionally check configuration using the `rconf` command.
5. Power-cycle the hardware in order to apply the change.

Revision History

Revision	Date	Description
1.0	14-Feb-2017	Initial version.
1.1	20-Jan-2022	Updated logo, disclaimer, copyright.

Status Definitions

Status	Definition
DRAFT	The content of this document is under review and subject to formal approval, which may result in modifications or additions.
APPROVED or unmarked	The content of this document has been approved for publication.