



868 MHz UHF-RFID USB-Stick

Loading the Firmware

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1 Introduction

1.1 Overview of this Document

Chapter 2 describes the installation and configuration of the Production Suite. You need to do this one time for a test setup.

Chapter 3 describes how to prepare the hardware. After this preparation, the firmware can be loaded onto the hardware.

Chapter 4 describes the first step of loading the bootloader with SAM-BA

Chapter 5 describes all following steps of loading, configuring and testing the firmware with the Production Suite.

Chapter 6 gives some troubleshooting hints in case one of this steps fails fatally.

1.2 Overview of the Firmware Loading Procedure

1.3 Hardware Tools Needed

- License Dongle
- Test-PC with installed software
- Test Adapter to activate the USB Boot-Assistant

Photo of the license dongle:



1.4 Software Tools Needed

- Bootloader File
- SAM-BA 2.18
- Firmware File
- Production Suite
- Script File


1.5 Steps

- Activate USB Boot Assistant of Atmel MCU (chapter 3)
- Flash iDTRONIC Bootloader using SAM-BA (chapter 4)
- Flash License from License Dongle using the Production Suite (chapter 5)
- Flash Firmware using the Production Suite (chapter 5)
- Check Status Register (chapter 5)
- Set Hidden Settings (chapter 5)
- Test Function (chapter 5)

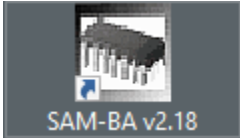
2 Installation and Configuration of Software

2.1 Installation of SAM-BA 2.18

Locate this file and install it with a double-click on it.

<input checked="" type="checkbox"/>	 SAM-BA v2.18 for Windows.exe	24.11.2020 14:22	12.037 KB
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After the installation is finished, you will see an icon on your desktop.



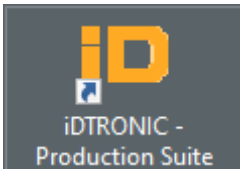
You may want to put the desktop icon into a folder.

2.2 Installation of the Production Suite

Locate this file and install it with a double-click on it.

<input checked="" type="checkbox"/>	 iDTRONIC - Production Suite Setup 1.0.10b.exe	24.09.2020 10:56	21.403 KB
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After the installation is finished, you will see an icon on your desktop.




You may want to put the desktop icon into a folder.

2.3 Installation of the Reader Demo Tool

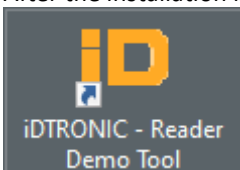
The Reader Demo Tool is not needed for loading the firmware.

It can be used for testing devices after repairs and for development.

Locate this file and install it with a double-click on it.

<input checked="" type="checkbox"/>	 iDTRONIC - Reader Demo Tool Setup 1.62.7d.exe	14.04.2021 22:19	17.149 KB
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After the installation is finished, you will see an icon on your desktop.



You may want to put the desktop icon into a folder.

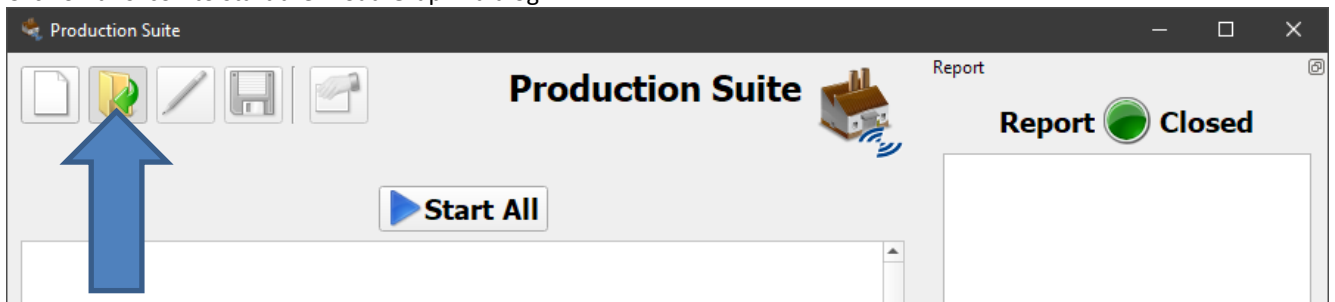
2.4 Configuration of the Production Suite

2.4.1 Start the Software

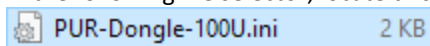


2.4.2 Open a Script File

Click on this icon to start the “Load Graph” dialog.



In the following file selector, locate this file with GraphSettings:



2.4.3 SamBa

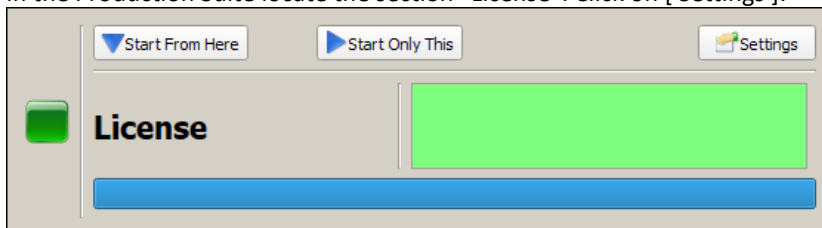
This part is not used, so there is no need to configure anything.

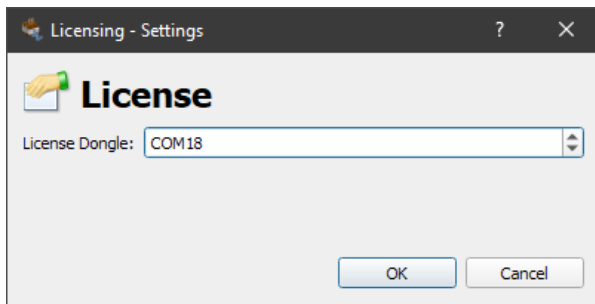
2.4.4 License

Plug in the License Dongle. The license dongle should appear in “Devices & Printers” as an additional COM port:



In the Production Suite locate the section “License”. Click on [Settings].

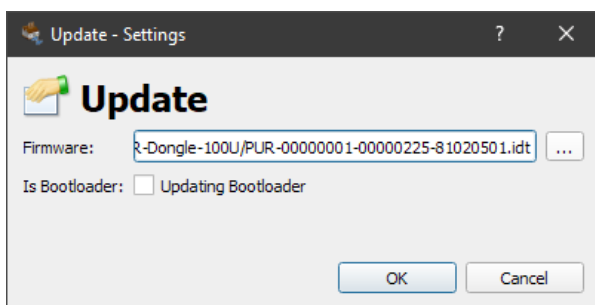
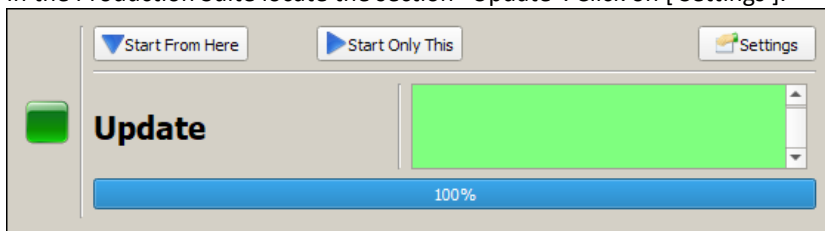




Change this setting to the COM port of the license dongle if needed.

2.4.5 Update

In the Production Suite locate the section “Update”. Click on [Settings].

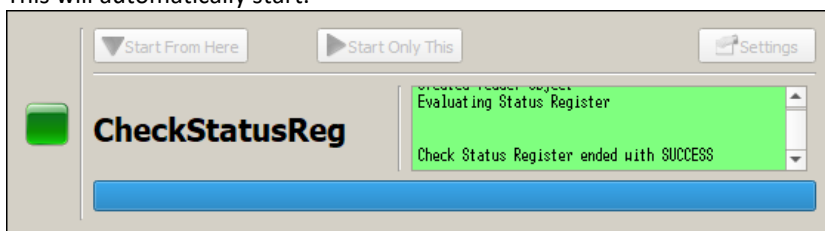


Click on [...] and locate the firmware file.

<input checked="" type="checkbox"/>		PUR-00000001-00000225-81020501.idt	24.09.2020 10:58	173 KB
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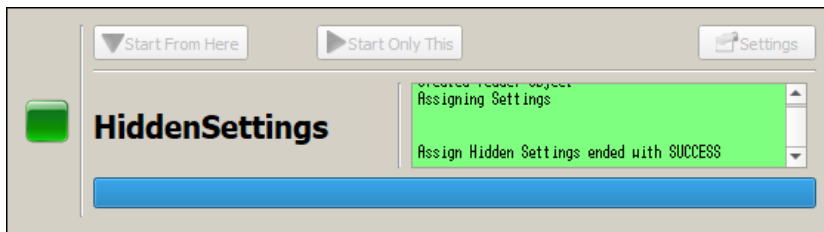
2.4.6 CheckStatusReg

This will automatically start.

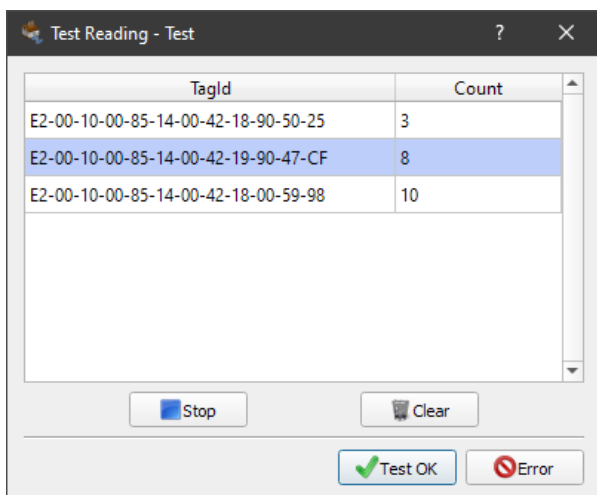
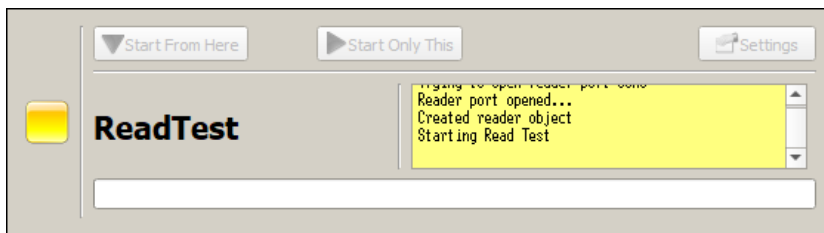


Only in case the status register value is different than zero, you get a

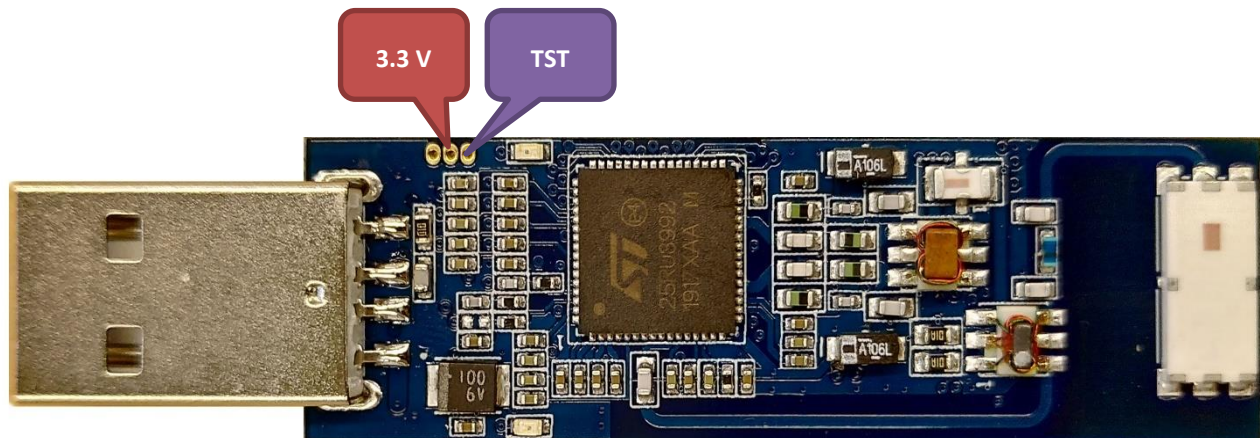
2.4.7 HiddenSettings



2.4.8 ReadTest



3 Prepare the Hardware



1. Power the hardware via USB.
2. Short circuit the pins 3.3 V (center) with TST (remote from the USB port) for 10 seconds.
3. Power cycle.

Now there is a COM port with a different number. This COM port accepts connection with the SAM-BA flash tool.

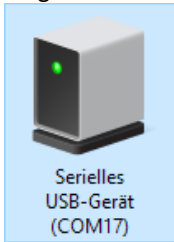
@Tracey: You may want to set up a test adapter to short circuit these pins.

Reference

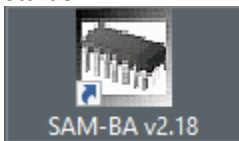
8.10 SAM-BA Boot Assistant

4 Flash Bootloader with SAM-BA

Plug in the RFID Device. You should see it as a serial device in “Devices and Printers”.

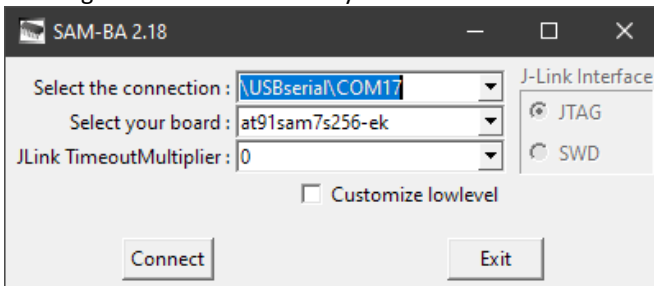


Start SAM-BA.

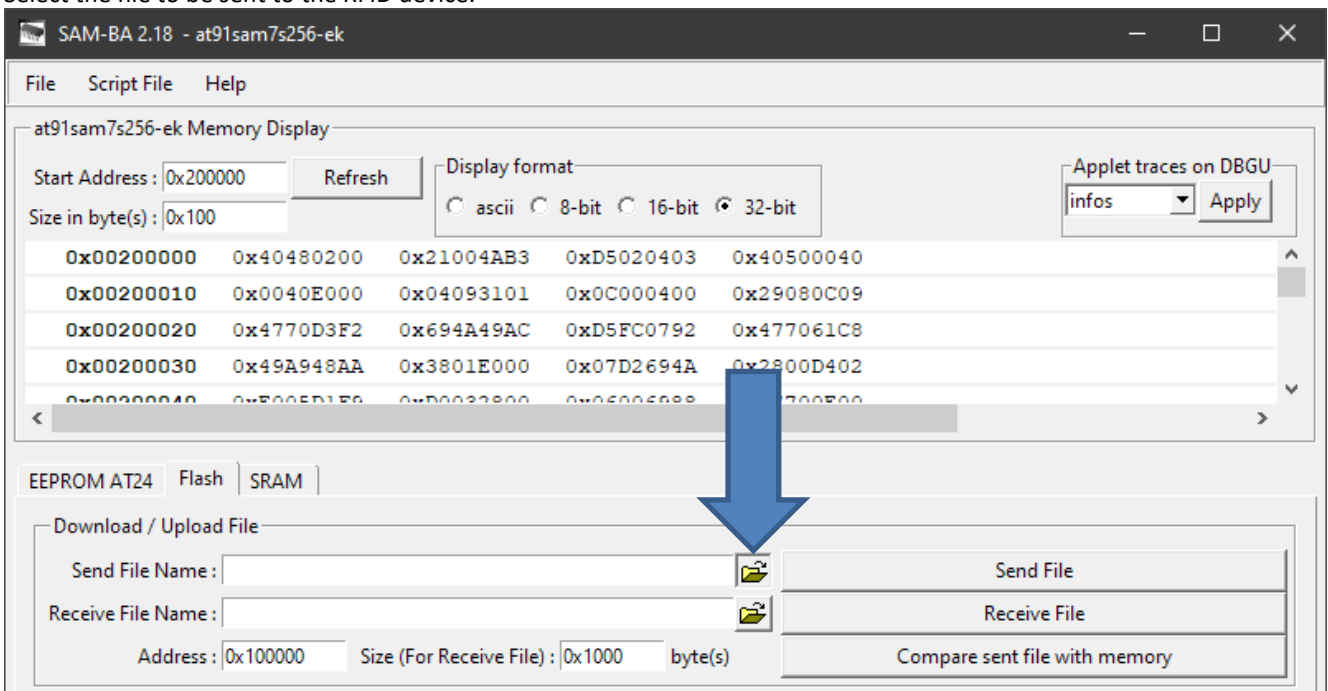


In the start dialog, check if the COM port number is correct.

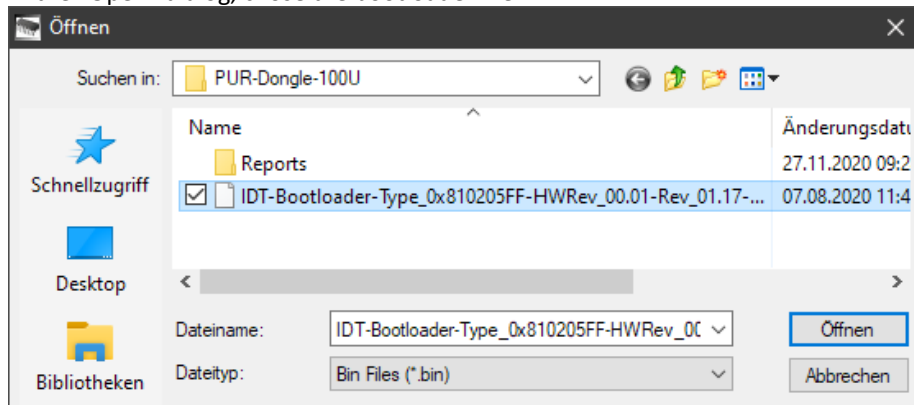
The target hardware at “Select your board” should be “at91sam7s256-ek”.



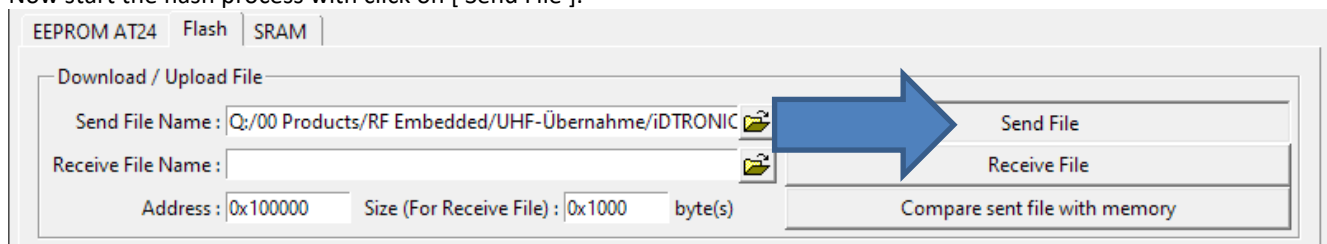
Select the file to be sent to the RFID device.



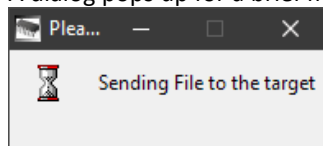
In the "Open" dialog, chose the bootloader file.



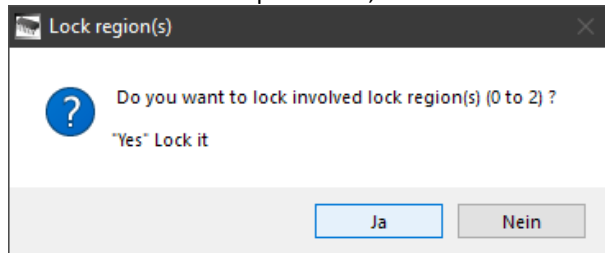
Now start the flash process with click on [Send File].



A dialog pops up for a brief moment.

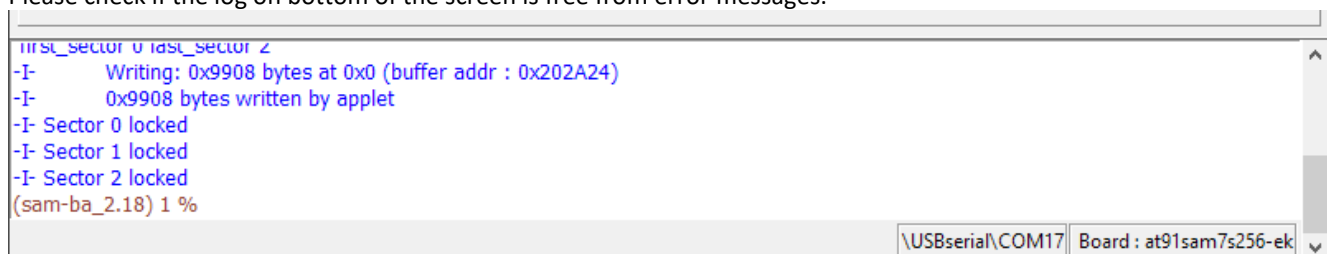


At the end of the flash procedure, the software asks to lock the regions, that now have been flashed. Confirm with [Yes].



After this, the flash process with SAM-BA is finished.

Please check if the log on bottom of the screen is free from error messages.



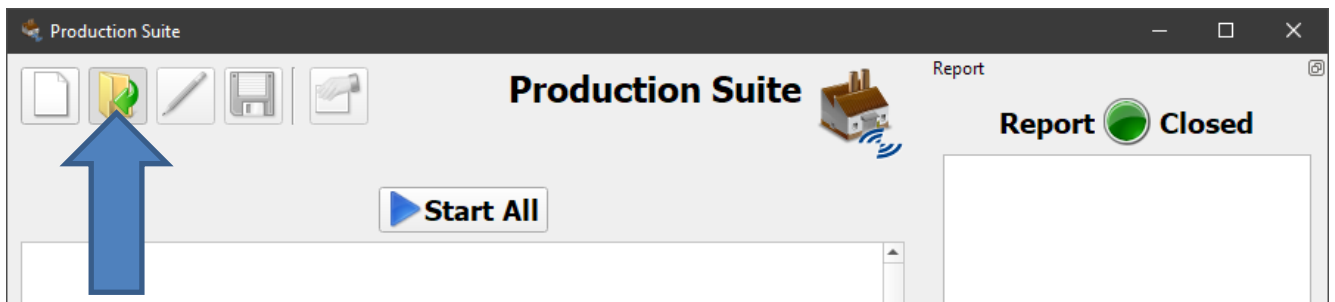
Important!

5 Flash License with the Production Suite

5.1 Start the Software



5.2 Open a Script File



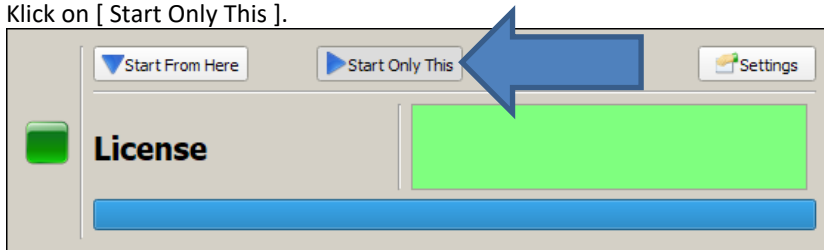
In the “Open” dialog, select the appropriate file.

5.3 SamBa

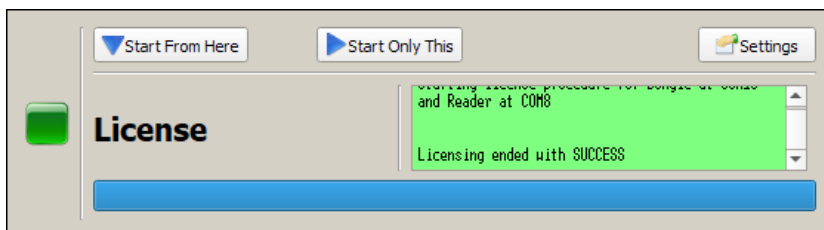
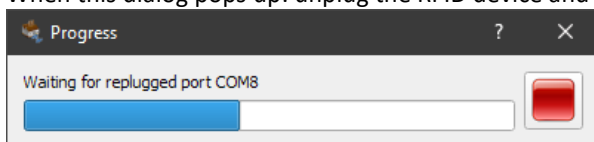
Do not use this part.

5.4 License

Click on [Start Only This].

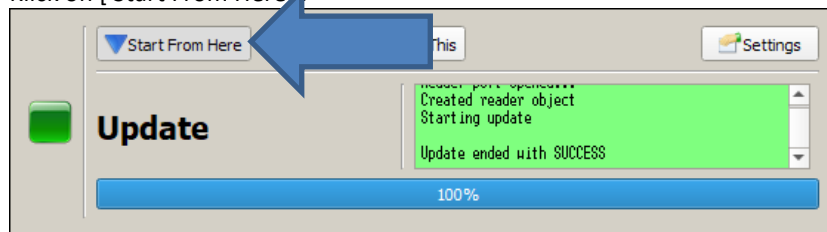


When this dialog pops up: unplug the RFID device and plug it in again.

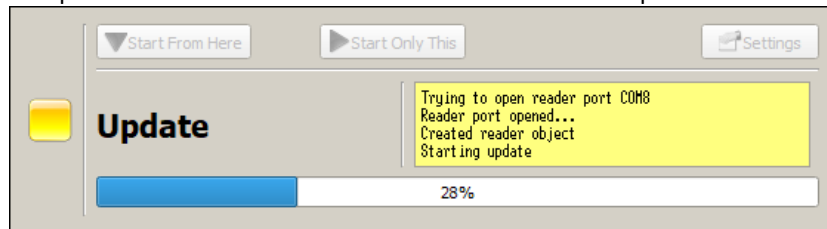


5.5 Update

Klick on [Start From Here]

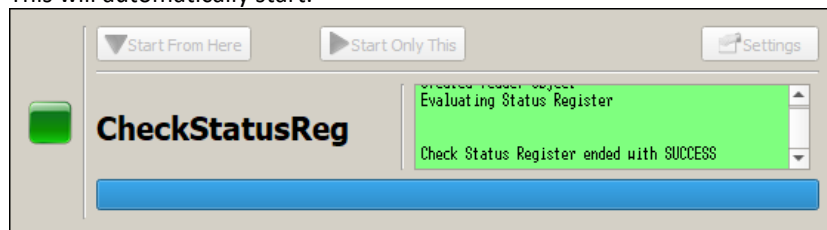


This process takes some seconds to be finished. Please be patient.

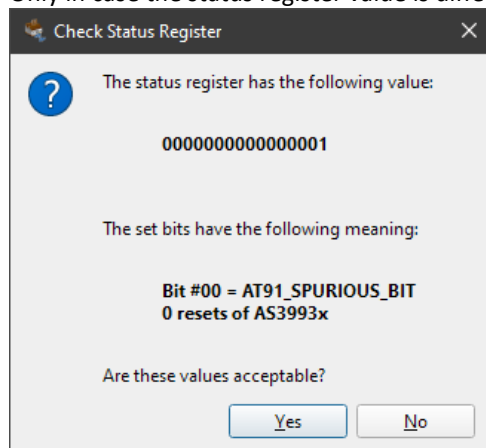


5.6 CheckStatusReg

This will automatically start.

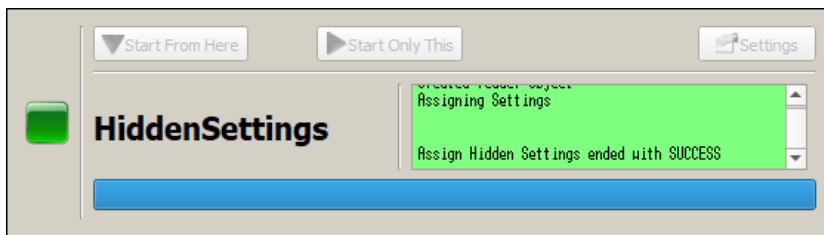


Only in case the status register value is different than zero, you get a note.

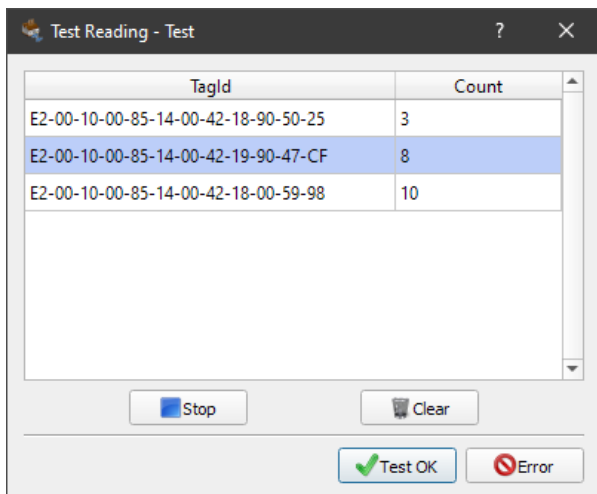
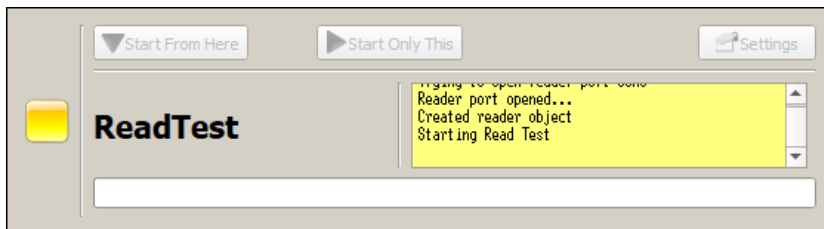


If the value is greater than 1, mark these PCBs with a sticker. They will probably have a problem.

5.7 HiddenSettings



5.8 ReadTest



Hold an UHF RFID tag the size of a card face to face to the white antenna and rotate it slightly. You should achieve at least 20 cm read range with this test.

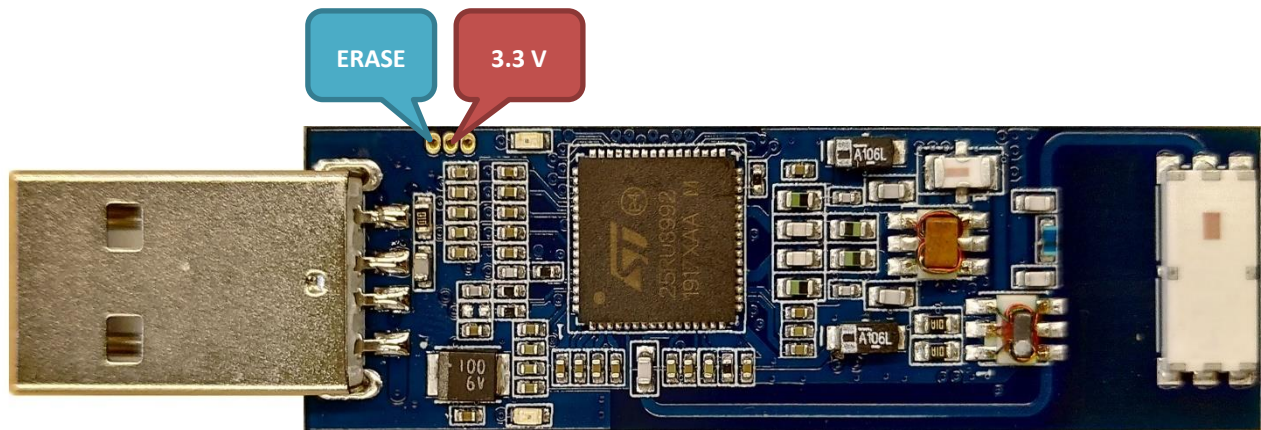
If the read range is > 20 cm click on [Test OK].

If the read range is much smaller, click on [Error] and check for misplaced RF components.

6 Troubleshooting

6.1 Erase all data in the flash memory.

The ERASE pin is used to re-initialize the Flash content and some of its NVM bits. It integrates a permanent pull-down resistor of about 15 k Ω to GND, so that it can be left unconnected for normal operations.



Reference

6.4 ERASE Pin

7 Revision History

Date	Version	Description
2021-02-17	0.1	Initial Draft
2021-05-12	0.2	Translated to English, Chapter Configuration of the Production Suite added