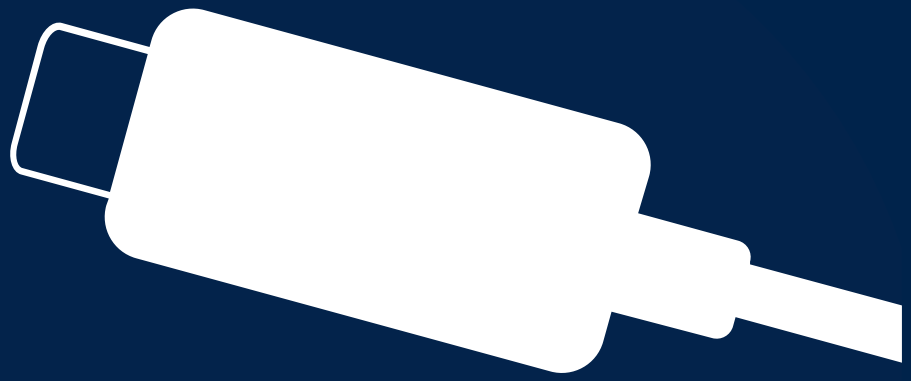
life.augmented



STUSB

STSW-STUSB005
Quick Start Guide

Customizing STUSB4761
using the Graphical User Interface

Introduction

This document describes how to install STUSB4761 Graphical User Interface (STSW-STUSB005), and main GUI features.

The GUI can be opened and used without any electrical connection to STUSB4761 IC (standalone mode).

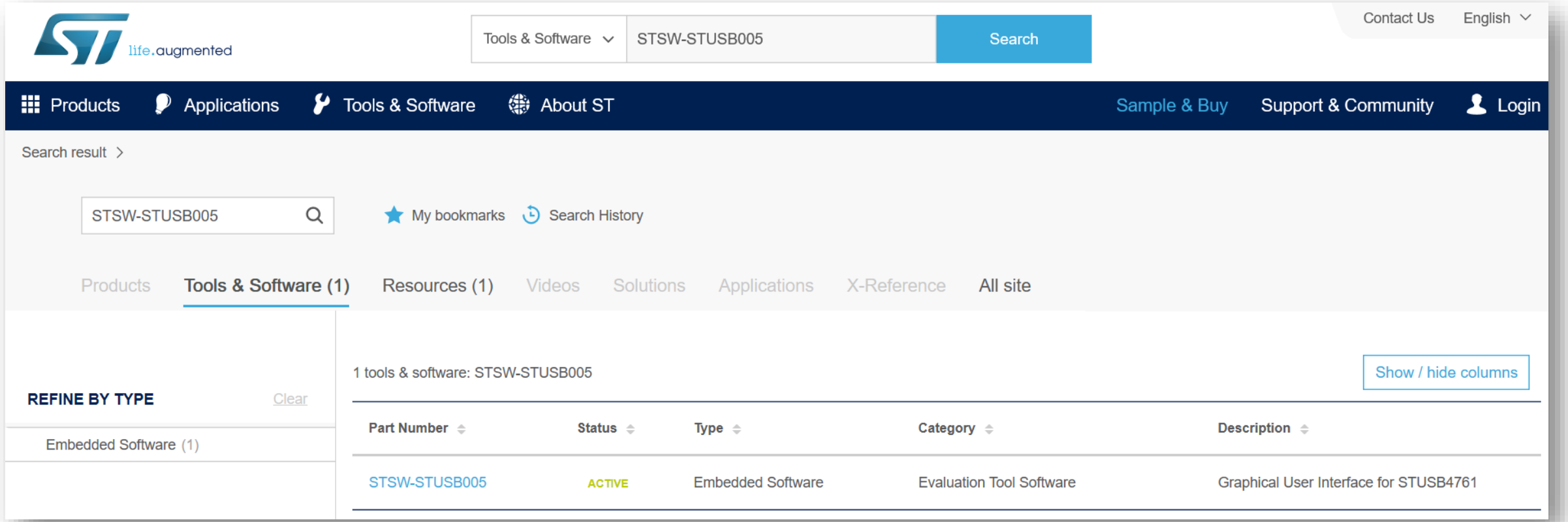
See page 7

Customization of STUSB4761 being possible either thru I²C or thru USB-C port (see page 15), different boards are proposed depending on the selected method.

Graphical User Interface (GUI)		
STSW-STUSB005	STUSB4761 Graphical User Interface	
Operating System	Windows or Linux	
Related HARDWARE		
EVAL-SCS003V1	STUSB utility dongle.	see page 17
NUCLEO-F072RB	STM32 Nucleo-64 development board with ARM Cortex M0	see page 18
EVLSTCH03-45WPD	STUSB4761 45W AC/DC reference design	

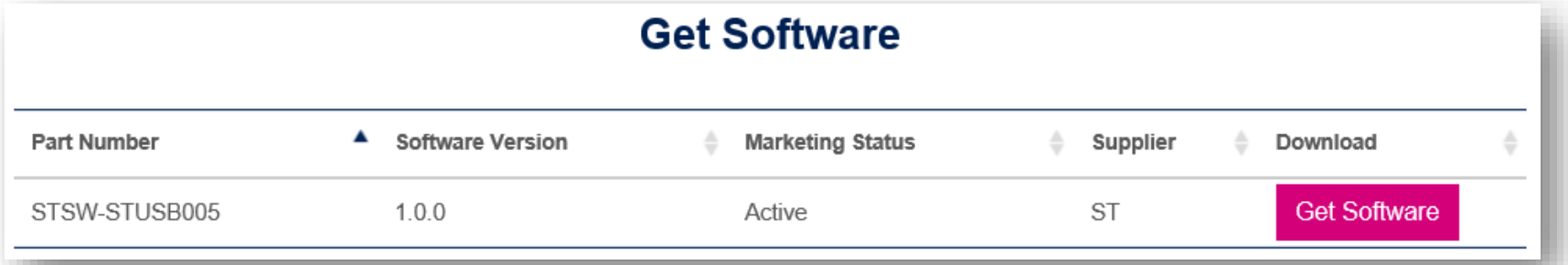
GUI set-up (1/4)

1. Download the STUSB4761 GUI package by searching STSW-STUSB005 from www.st.com home page:

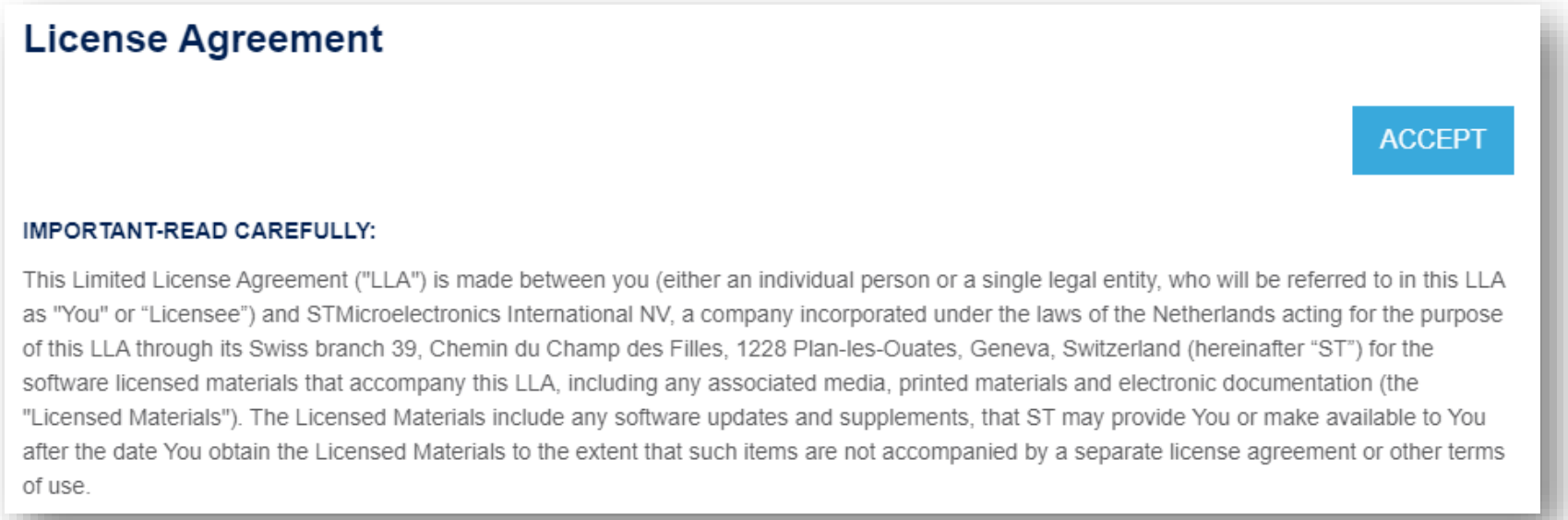


GUI set-up (2/4)

2 Then click on “Get Software” from the bottom of the page

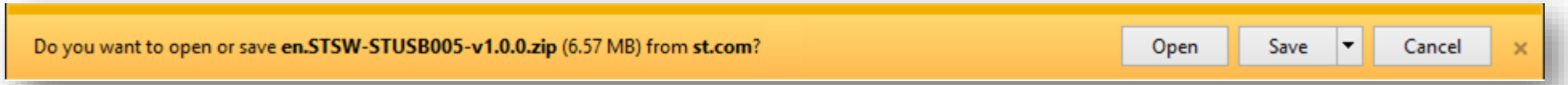


3 Download will start after accepting the License Agreement, and filling contact information.

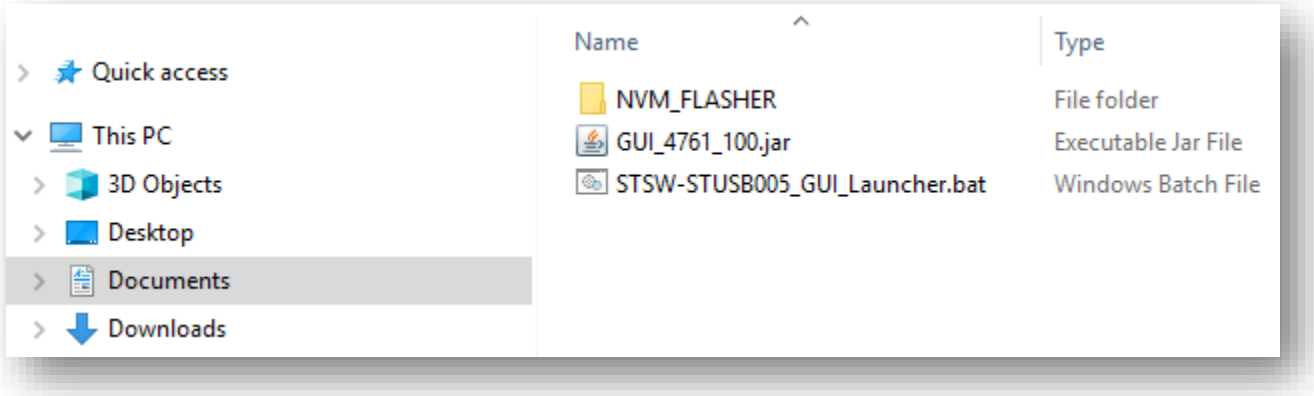


GUI set-up (3/4)

4 Save the file **en.STSW-STUSB005.zip** on your laptop



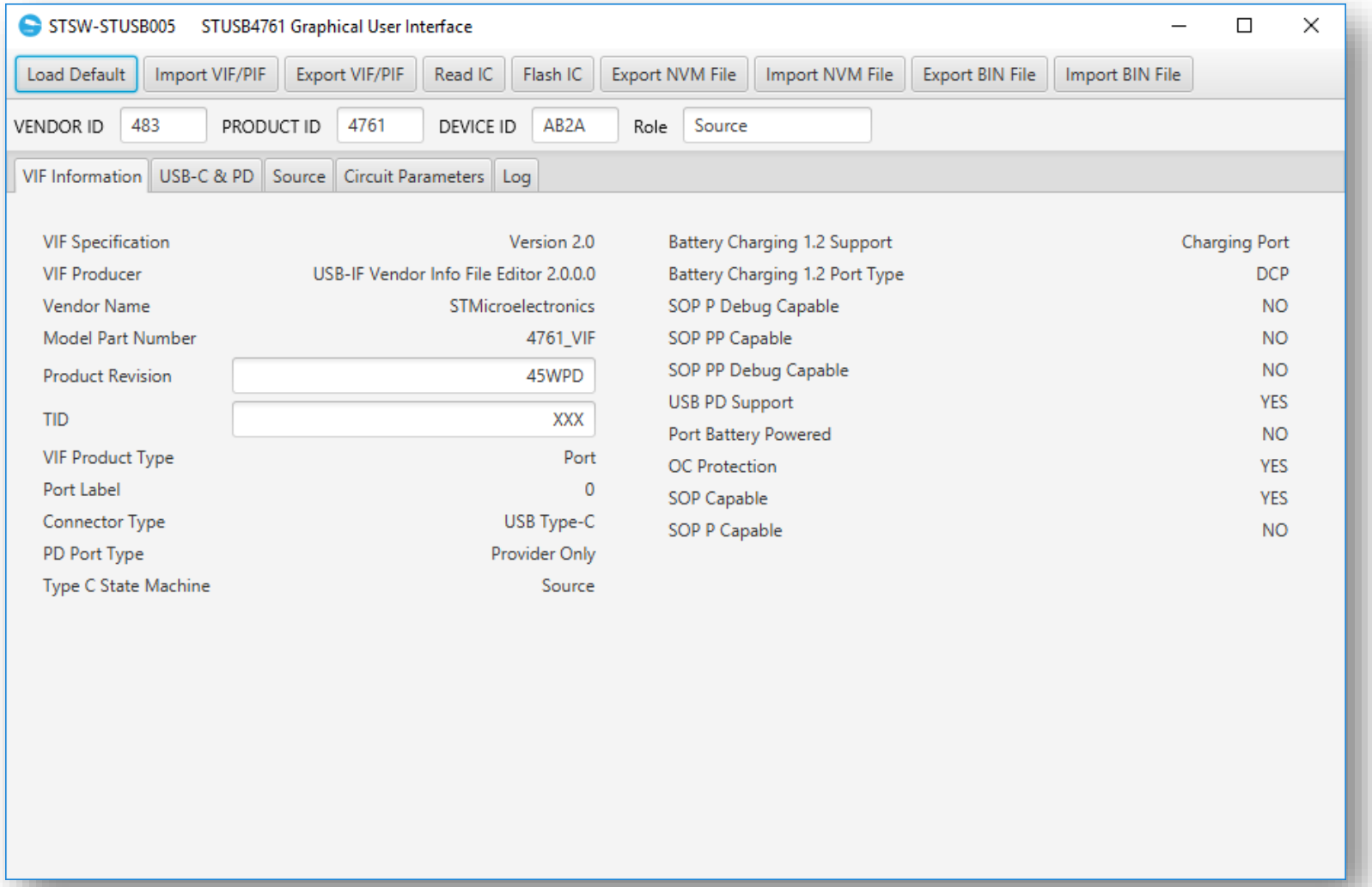
and unzip:



GUI set-up (4/4)

5 Click on the STSW-STUSB005_GUI_Launcher.bat file to open the GUI. The following window must appear.

The GUI is now ready to use.



GUI overview

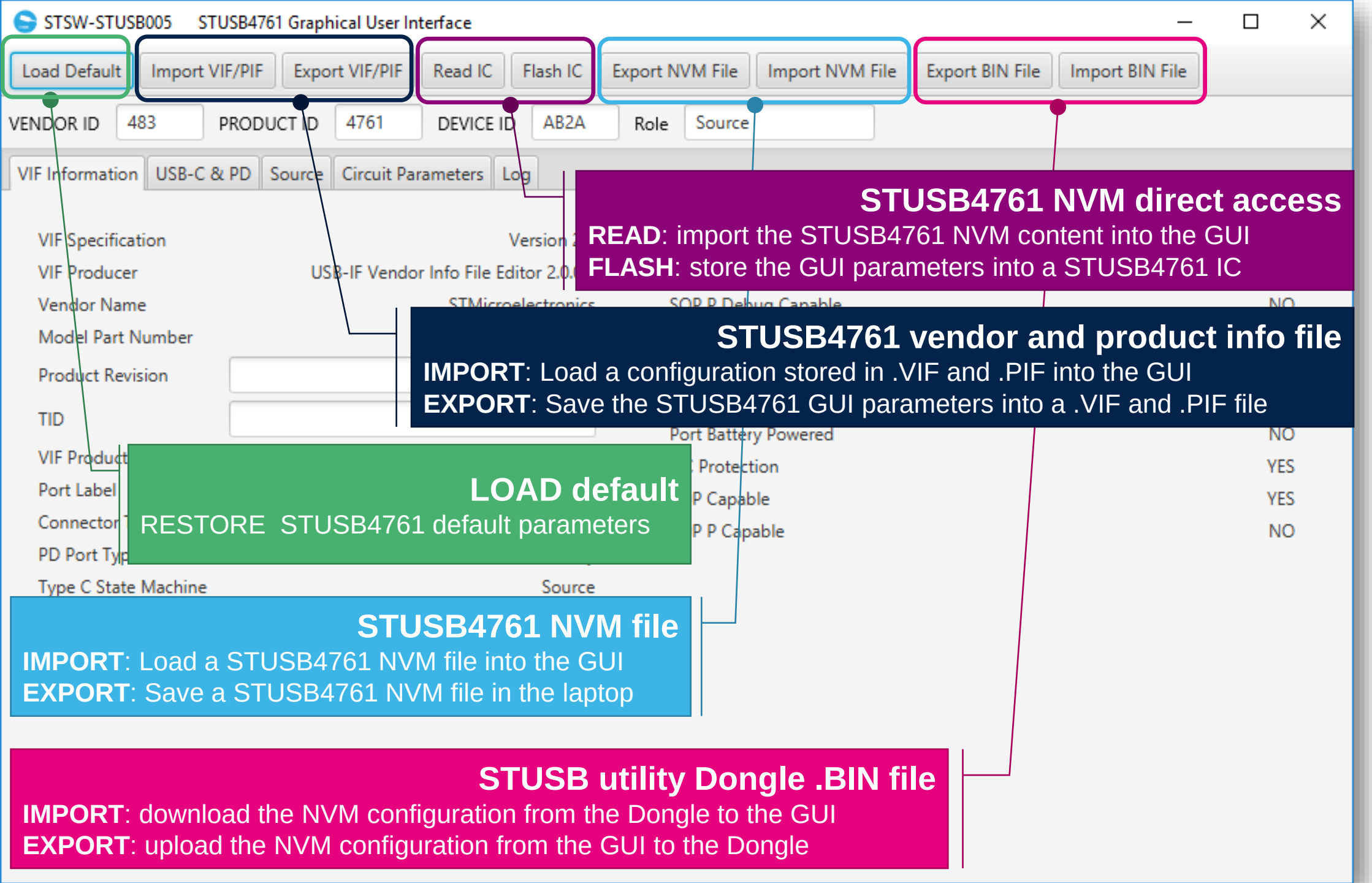
The GUI provides an easy way to change STUSB4761 parameters stored in Non Volatile Memory (NVM)

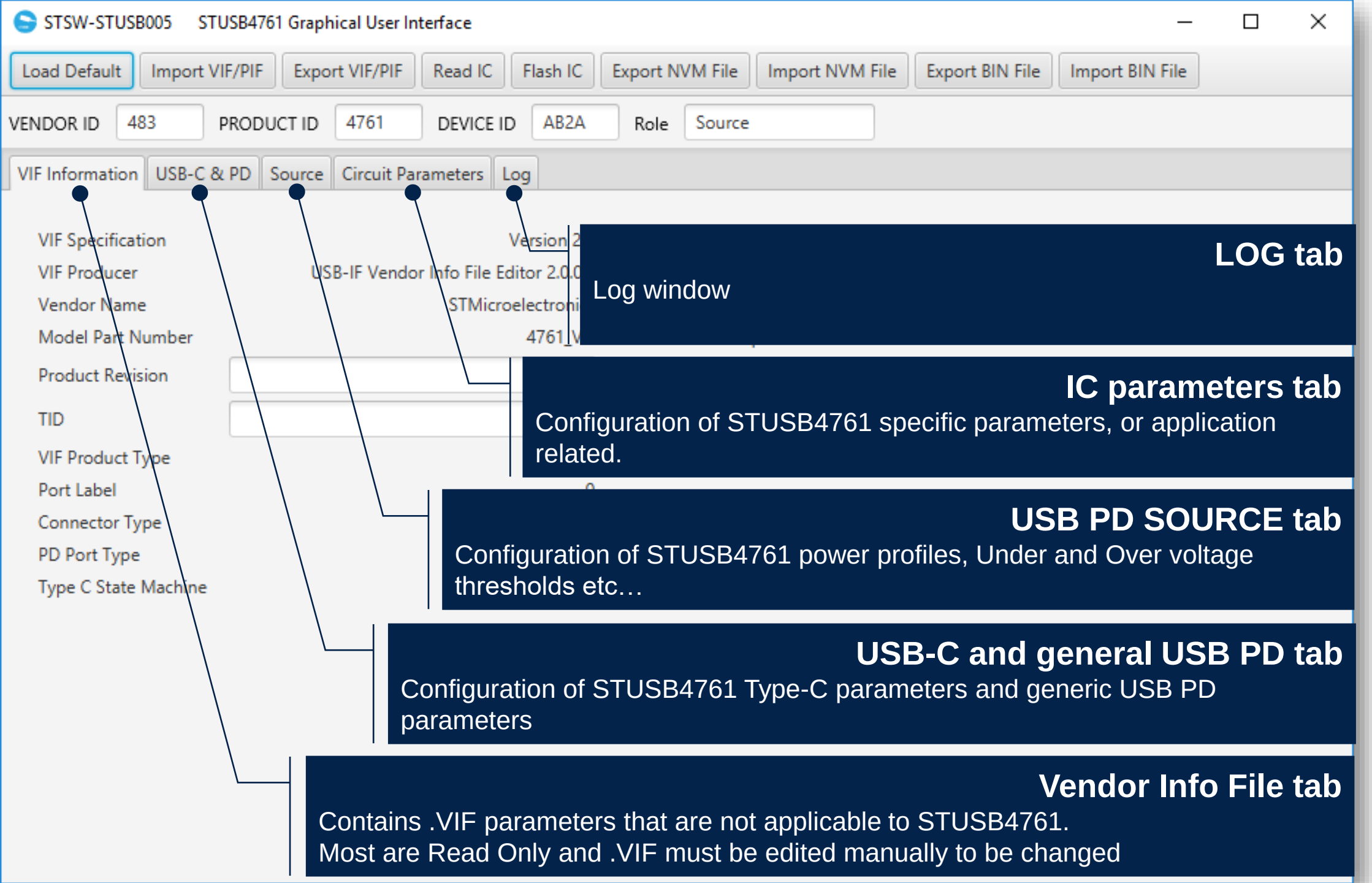
The GUI can be used in different manners, and allows synchronization between different environments:

- the Vendor Info File (.VIF) and Product Info File (.PIF)
- the physical NVM content (when connected to a STUSB4761 IC)
- the NVM content stored in a C code structure (for I2C Read/Write operations with STUSB4761)
- the NVM content stored a utility dongle (EVAL-SCS003V1 tool for customization thru CC pins)

It allows:

- to configure a STUSB4761 IC starting from an existing Vendor Info File (.VIF) and adding STUSB4761 specific or application specific parameters (Product Info File (.PIF)),
- or vice versa, generate a .VIF from an existing STUSB4761 customization
- or both: start from scratch modifying the STUSB4761 default configuration and generate:
    - associated .VIF
    - associated STUSB4761 NVM configuration in MEMORY bank format (.h header file for customization from I²C using an STM32)
    - associated STUSB4761 NVM configuration in STUSB utility dongle format (.bin file for customization thru USB-C connector using EVAL-SCS003V1 tool.


STSW-STUSB005 STUSB4761 Graphical User Interface
Load Default
Import VIF/PIF
Export VIF/PIF
Read IC
Flash IC
Export NVM File
Import NVM File
Export BIN File
Import BIN File
VENDOR ID 483
PRODUCT ID 4761
DEVICE ID AB2A
Role Source
VIF Information
USB-C & PD
Source
Circuit Parameters
Log
VIF Specification
VIF Producer
Vendor Name
Model Part Number
Product Revision
TID
Port Label
Type C State Machine
Source
NO
YES
YES
NO
STUSB4761 NVM direct access
READ: import the STUSB4761 NVM content into the GUI
FLASH: store the GUI parameters into a STUSB4761 IC
STUSB4761 vendor and product info file
IMPORT: Load a configuration stored in .VIF and .PIF into the GUI
EXPORT: Save the STUSB4761 GUI parameters into a .VIF and .PIF file
LOAD default
RESTORE STUSB4761 default parameters
STUSB4761 NVM file
IMPORT: Load a STUSB4761 NVM file into the GUI
EXPORT: Save a STUSB4761 NVM file in the laptop
STUSB utility Dongle .BIN file
IMPORT: download the NVM configuration from the Dongle to the GUI
EXPORT: upload the NVM configuration from the GUI to the Dongle



LOG tab

Log window

IC parameters tab

Configuration of STUSB4761 specific parameters, or application related.

USB PD SOURCE tab

Configuration of STUSB4761 power profiles, Under and Over voltage thresholds etc…

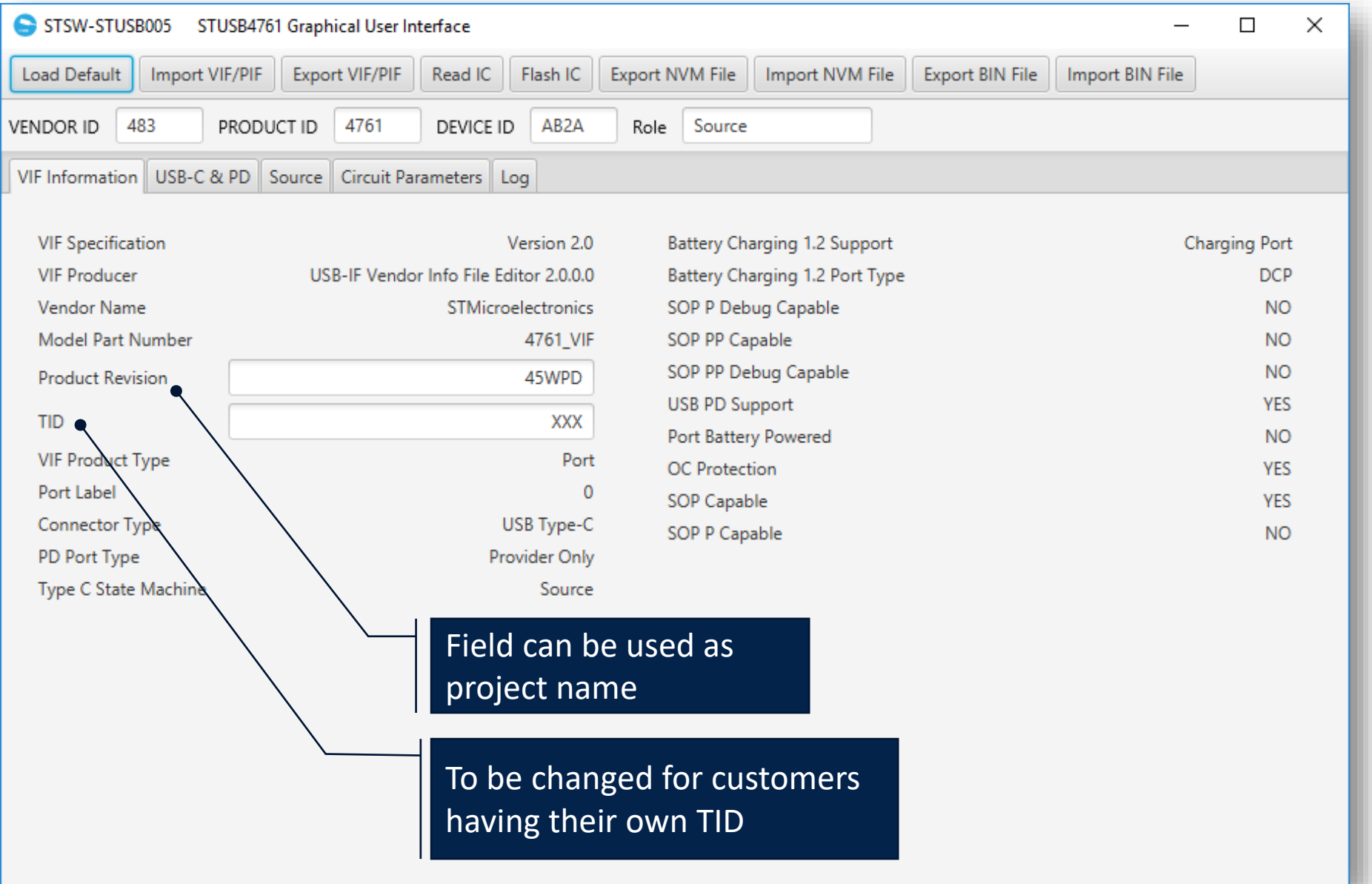
USB-C and general USB PD tab

Configuration of STUSB4761 Type-C parameters and generic USB PD parameters

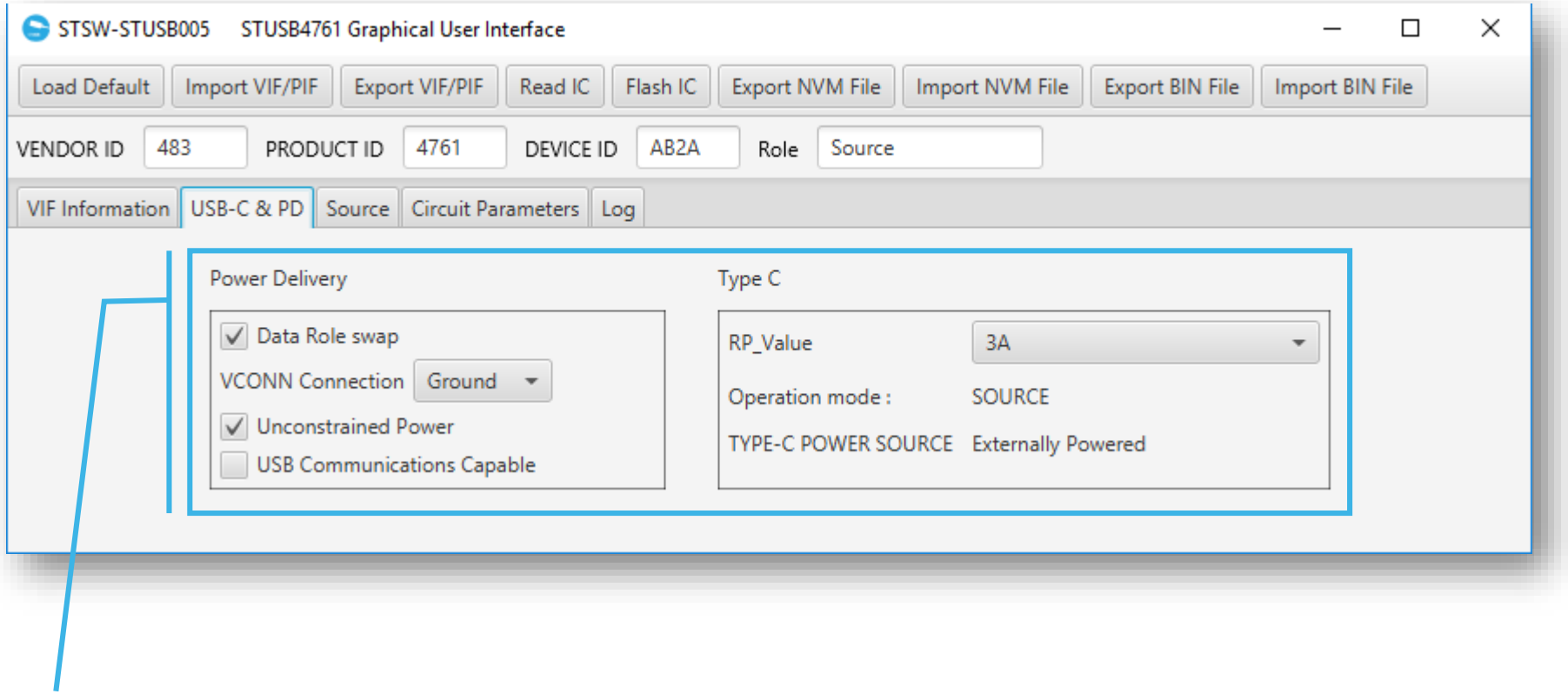
Vendor Info File tab

Contains .VIF parameters that are not applicable to STUSB4761.
Most are Read Only and .VIF must be edited manually to be changed

Vendor Info File tab



USB-C and general USB PD tab

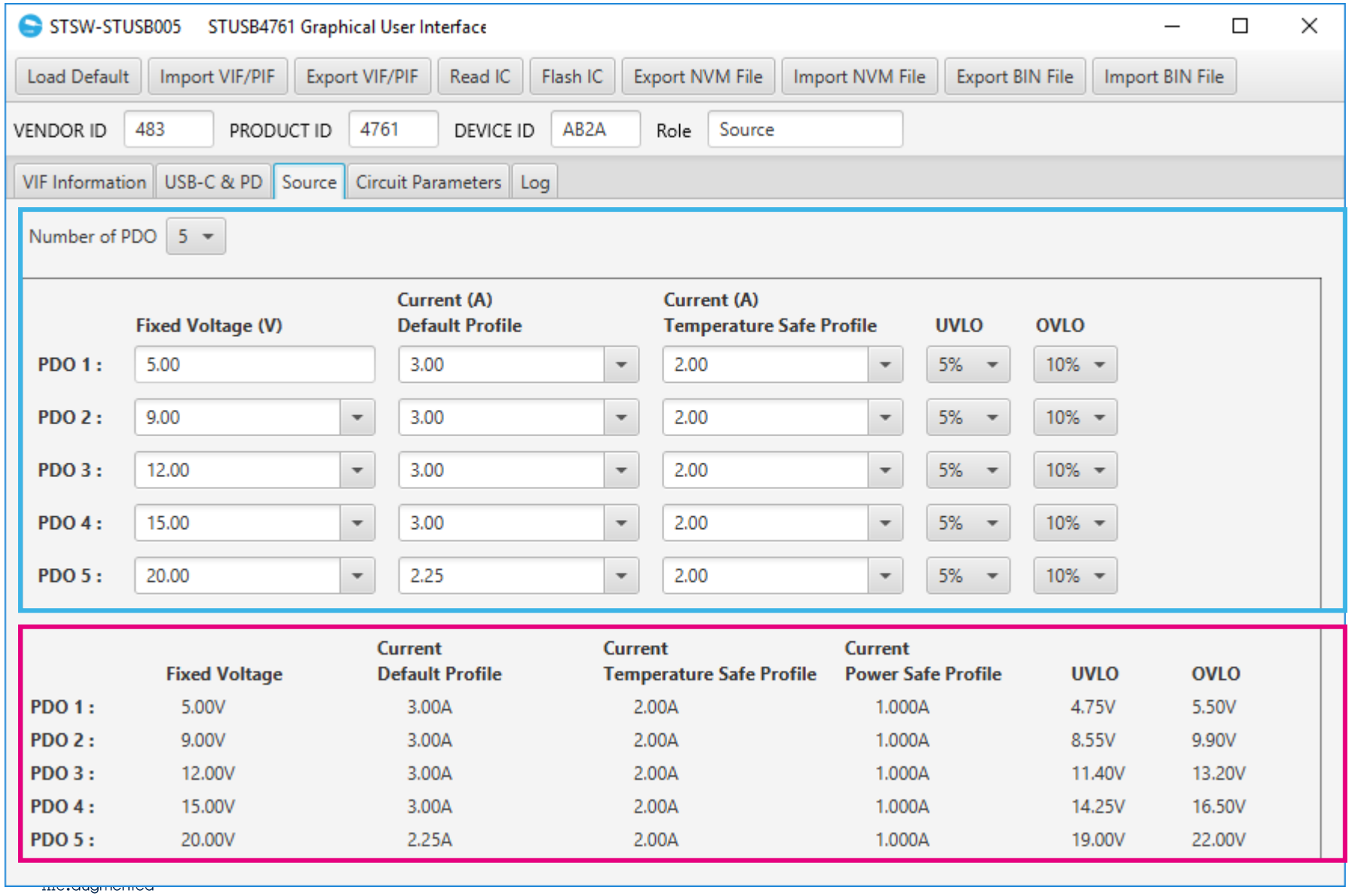


Configuration of STUSB4761 Type-C parameters and generic USB PD parameters.

Check STUSB4761 datasheet, section §4.1. “Parameter overview” for definition.
NB: VCONN pin can be configured to GND when:

- current is <3A for all PDO
- or when captive cable is used

USB PD SOURCE tab



	Fixed Voltage (V)	Current (A) Default Profile	Current (A) Temperature Safe Profile	UVLO	OVLO
PDO 1 :	5.00	3.00	2.00	5%	10%
PDO 2 :	9.00	3.00	2.00	5%	10%
PDO 3 :	12.00	3.00	2.00	5%	10%
PDO 4 :	15.00	3.00	2.00	5%	10%
PDO 5 :	20.00	2.25	2.00	5%	10%

	Fixed Voltage	Current Default Profile	Current Temperature Safe Profile	Current Power Safe Profile	UVLO	OVLO
PDO 1 :	5.00V	3.00A	2.00A	1.000A	4.75V	5.50V
PDO 2 :	9.00V	3.00A	2.00A	1.000A	8.55V	9.90V
PDO 3 :	12.00V	3.00A	2.00A	1.000A	11.40V	13.20V
PDO 4 :	15.00V	3.00A	2.00A	1.000A	14.25V	16.50V
PDO 5 :	20.00V	2.25A	2.00A	1.000A	19.00V	22.00V

Configuration field

- Up to 5 PDO available
- PDO1 must be 5V as per USB PD standard.
- PDO must be ranked by increasing voltage values
- 5V, 9V and 15V are standard values
- 2 voltage values can be full custom
- 1 current values (default profile) can be full custom

Summary table:

“Power safe” currents are automatically set to half “temperature safe” values. See STUSB4761 datasheet section §3.4

IC parameters tab

Discharge time settings

Constant Current mode settings

See STUSB4761 Datasheet. Section §3.6.2

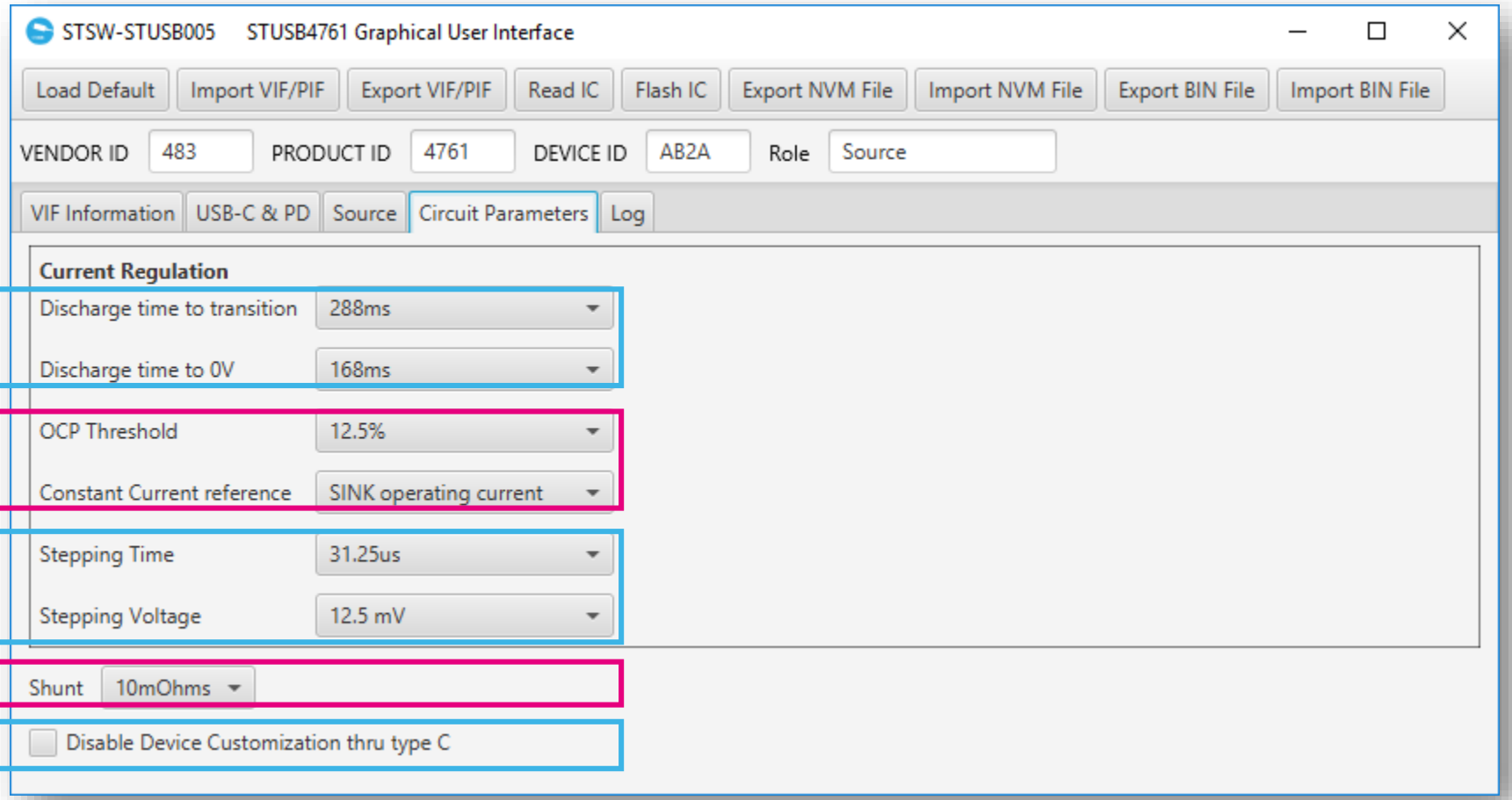
PDO Voltage transition settings

Allows to fine tune the transition slew rate

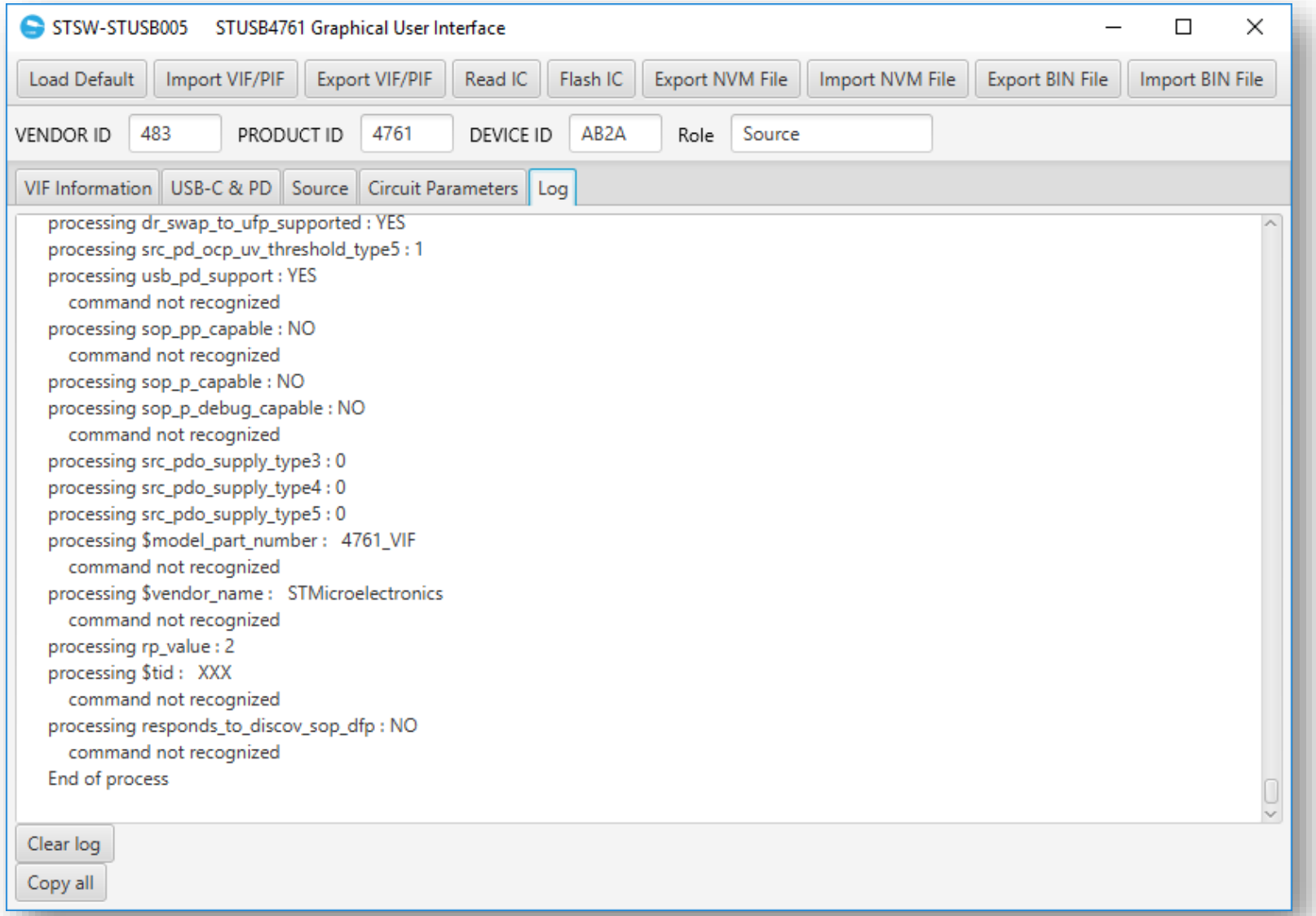
Shunt Resistor setting

CC pin customization settings

See STUSB4761 Datasheet. Section §3.1 and VDM_CUSTOM_DIS param. Section §4.1



LOG tab


STSW-STUSB005 STUSB4761 Graphical User Interface
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Read IC
Flash IC
Export NVM File
Import NVM File
Export BIN File
Import BIN File
VENDOR ID 483
PRODUCT ID 4761
DEVICE ID AB2A
Role Source
VIF Information
USB-C & PD
Source
Circuit Parameters
Log
processing dr_swap_to_ufp_supported : YES
processing src_pd_ocp_uv_threshold_type5 : 1
processing usb_pd_support : YES
command not recognized
processing sop_pp_capable : NO
command not recognized
processing sop_p_capable : NO
processing sop_p_debug_capable : NO
command not recognized
processing src_pdo_supply_type3 : 0
processing src_pdo_supply_type4 : 0
processing src_pdo_supply_type5 : 0
processing $model_part_number : 4761_VIF
command not recognized
processing $vendor_name : STMicroelectronics
command not recognized
processing rp_value : 2
processing $tid : XXX
command not recognized
processing responds_to_discov_sop_dfp : NO
command not recognized
End of process
Clear log
Copy all

NVM customization
via I²C or via CC pin?

For more flexibility, NVM can be physically accessed through 2 distinct communication channels:

1. using STUSB4761 I²C interface
2. through USB port (unstructured Vendor Define Messages on CC pin)

1. I²C interface customization

This method is not applicable on final product (I²C port must be accessible).

It can be done:

a. at IC level (non-soldered device)
b. at PCB level (IC already mounted)

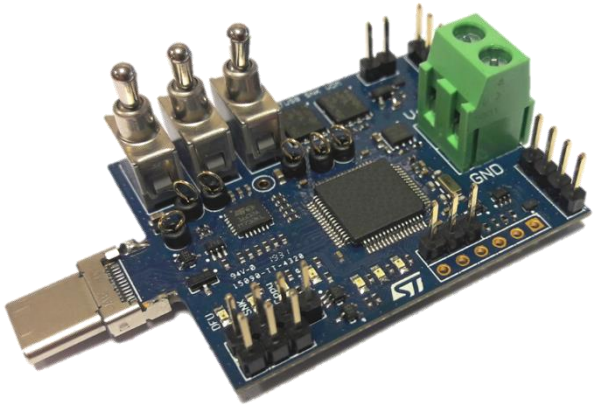
2. USB port customization

This method is applicable on final product (by default, STUSB4761 NVM memory is accessible thru CC pin).

Hardware tools
(1/3)

NUCLEO-F072RB

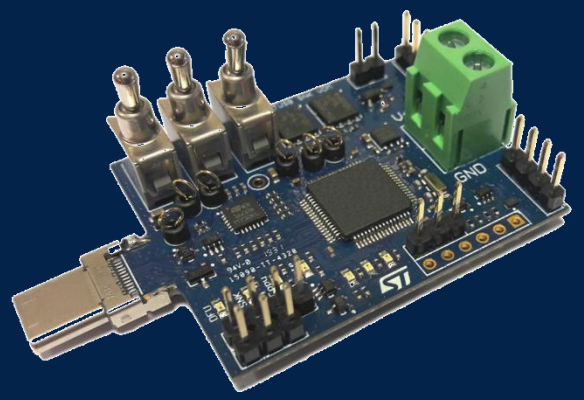
- NVM Customization via I²C
- Recommended at PCB level



EVAL-SCS003V1

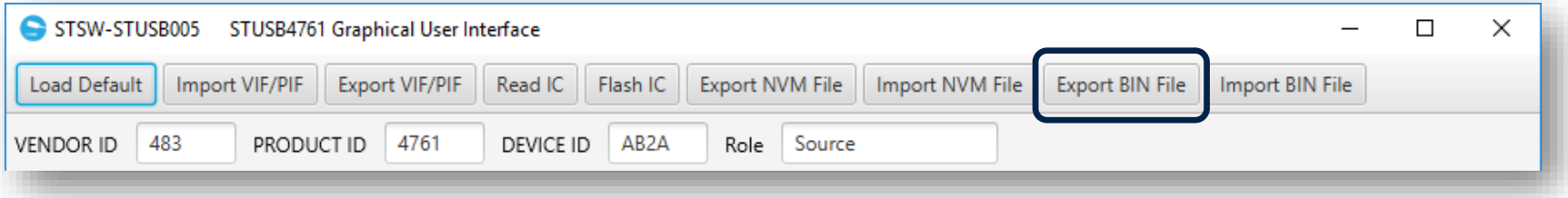
- NVM Customization via USB-C port (CC pin)
- Recommended at final product level

Hardware tools
EVAL-SCS003V1 (2/3)



EVAL-SCS003V1

- NVM Customization via USB-C port (CC pin)
- Recommended at final product level



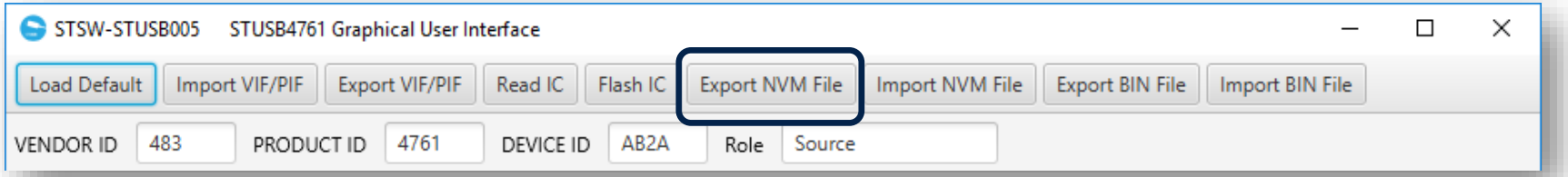
- Save the STUSB4761 configuration file by pressing the “EXPORT BIN FILE” button

- Please refer to EVAL-SCS003V1 (STUSB Utility Dongle) “Quick start Guide” to load the .BIN file on the dongle and program STUSB4761 via USB-C port

Hardware tools
NUCLEO-F072RB (3/3)

NUCLEO-F072RB

- NVM Customization via I²C
- Recommended at PCB level



- Save the STUSB4761 configuration file by pressing the “EXPORT NVM FILE” button

- Please ask to your local support the STSW-STUSB006 software package (STUSB4761 NVM software library) to automatically generate the correct I²C sequence re-using the NVM file and execute it on the NUCLEO-F072RB

ON REQUEST

Thank you

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