

# Versatile USB- I<sup>2</sup>C bridge for communication and programming of ST wireless charging IC

## Introduction

The **STEVAL-USBI2CFT** is a versatile USB-I<sup>2</sup>C bridge for communication and programming of ST wireless charging IC, and evaluation boards, with the **STSW-WPSTUDIO** software.

**Figure 1. STEVAL-USBI2CFT**



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## 1 Software installation

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The **STEVAL-USBI2CFT** is based on the FT260Q, USB HID to I<sup>2</sup>C bus convertor. The FT260Q does not require any additional software drivers.

The Windows operating system automatically installs the necessary driver after the first USB plug-in.

## 2 Hardware connection

Before starting the communication with a wireless receiver or transmitter, the dongles shall be correctly connected to each other. Connect GND of bridge with GND of evaluation board, continue with connecting of SDA, SCL, and INT.

The STEVAL-USB2C board includes an internal level-shifter.

The voltage level can be changed soldering one of the soldering bridges.

The voltage can be set to 1.8, 2.5 or 3.3 V depending from what solder bridge was soldered.

Ensure that the target evaluation kit is connected to the USB-I<sup>2</sup>C bridge and the bridge is connected to the PC with the STSW-WPSTUDIO software installed.

The STSW-WPSTUDIO can connect a maximum of two USB-I<sup>2</sup>C converters, allowing PTx and PRx to be evaluated simultaneously.

**Figure 2. STEVAL-USB2CFT hardware connection with STEVAL-WLC98RX**

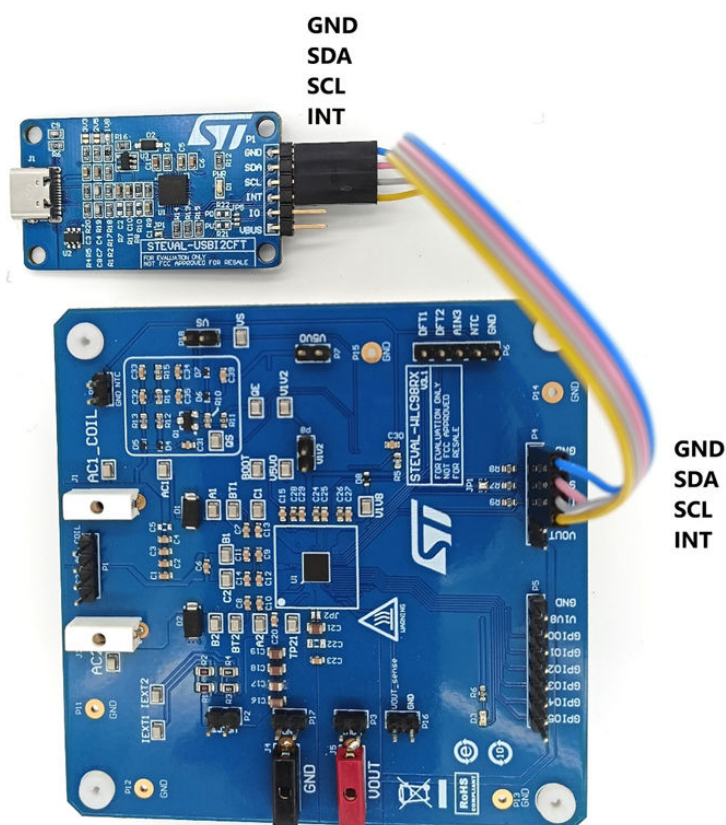


Figure 3. STEVAL-USB2CFT hardware connection

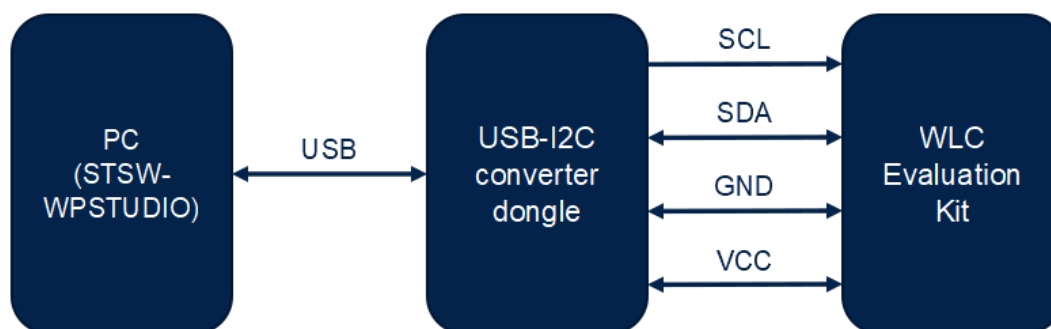


Table 1. List of supported WLC evaluation kit

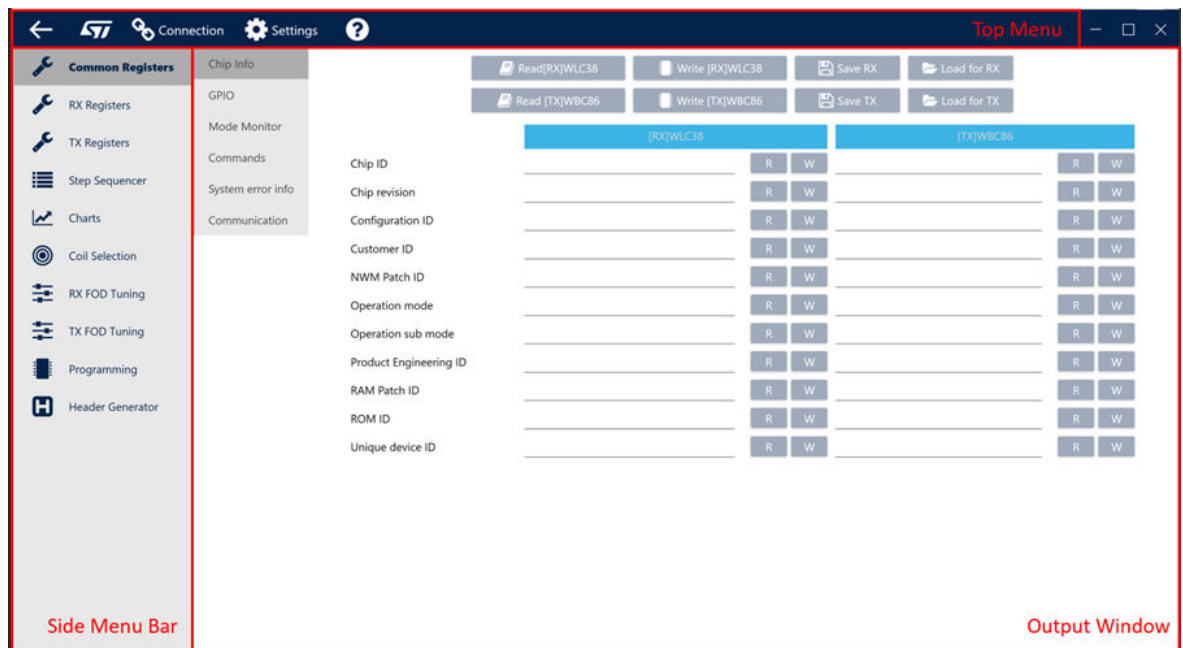
| Part number    | PRx/PTx | Description                        |
|----------------|---------|------------------------------------|
| STEVAL-WBC86TX | PTx     | 5 W PTx for general application    |
| STEVAL-WLC98RX | PRx     | Up to 50 W application             |
| STEVAL-WLC38RX | PRx     | 5/15 W PRx for general application |
| STEVAL-WLC99RX | PRx     | Up to 70 W application             |

### 3 Interface description

The STSW-WPSTUDIO main interface consists of three main sections: the top menu, the side menu bar, and the output window.

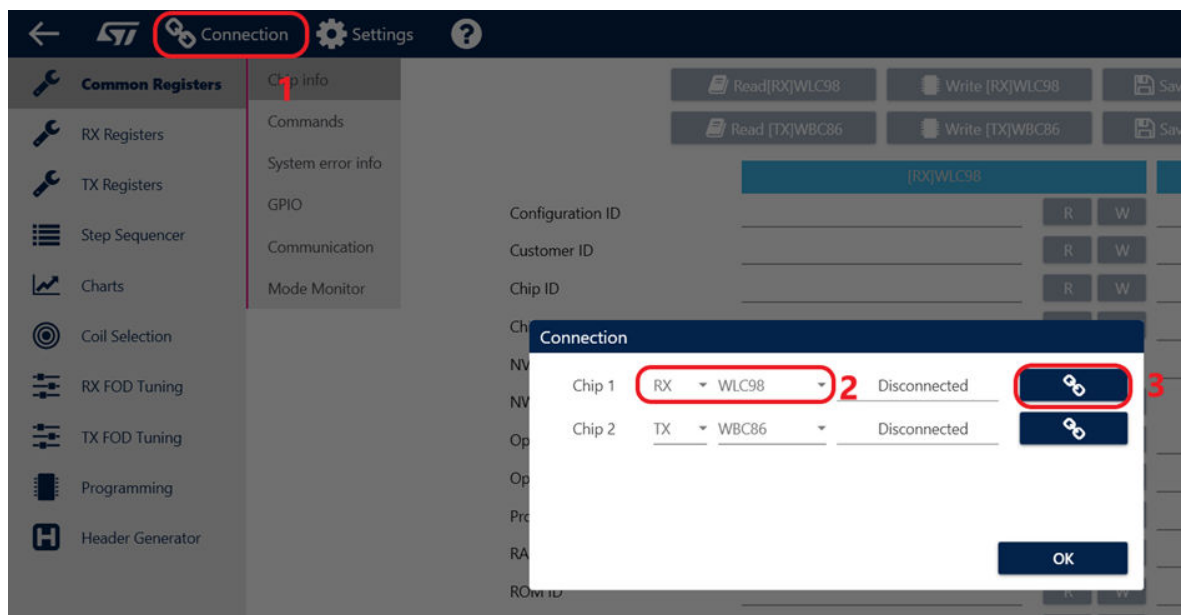
The side menu bar selects the output in the output window.

Figure 4. STSW-WPSTUDIO main interface



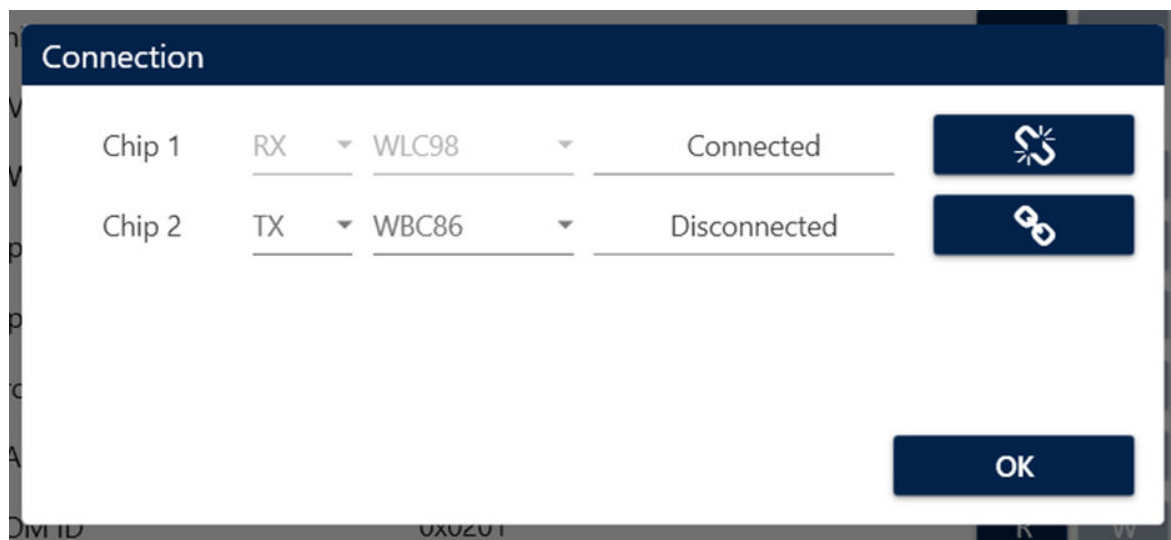
Connect the wireless receiver or transmitter to GUI. Select the correct device on the evaluation board.

Figure 5. Connection



The evaluation board was correctly connected to GUI.

Figure 6. Confirmed connection



The wireless receiver or transmitter setup is now ready to use. For the detail information about configuration, possibilities and features, follow the User Manual of the selected Wireless receiver or transmitter board.

## 4 Component layout

Figure 7. STEVAL-USBI2CFT PCB layout

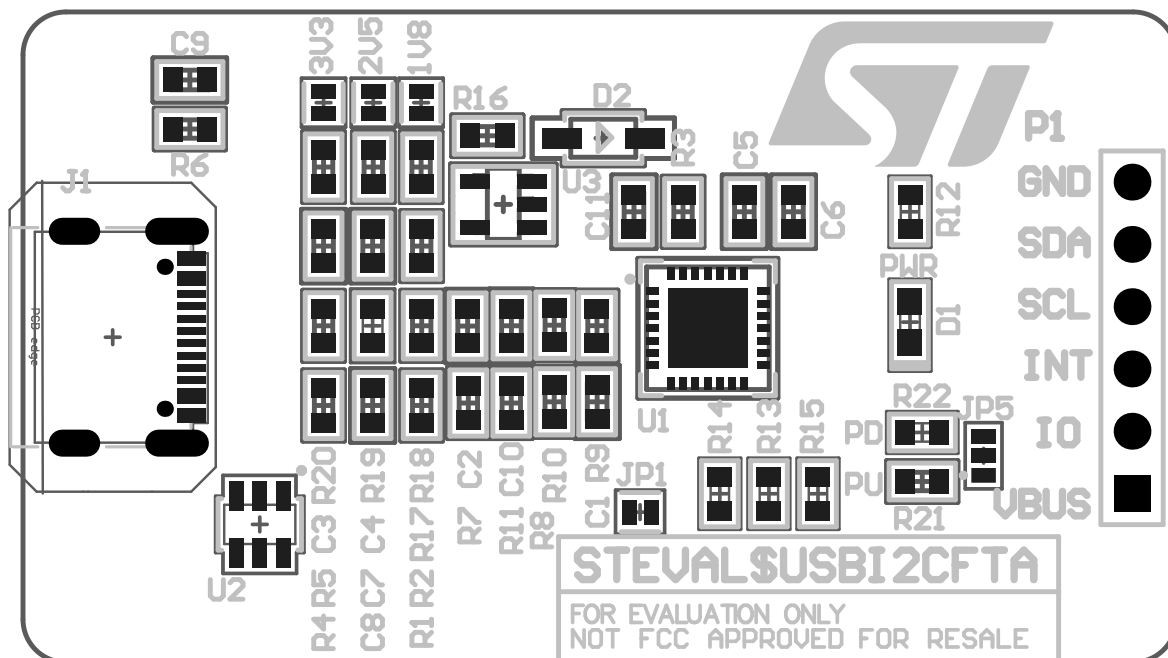


Figure 8. STEVAL-USBI2CFT top layout

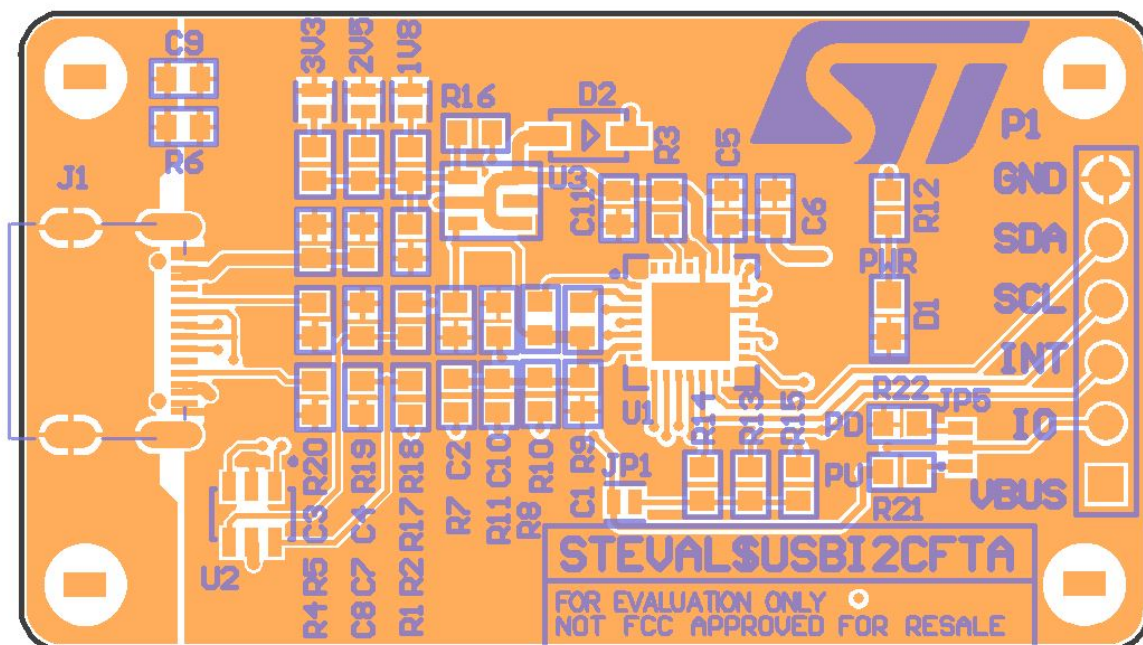
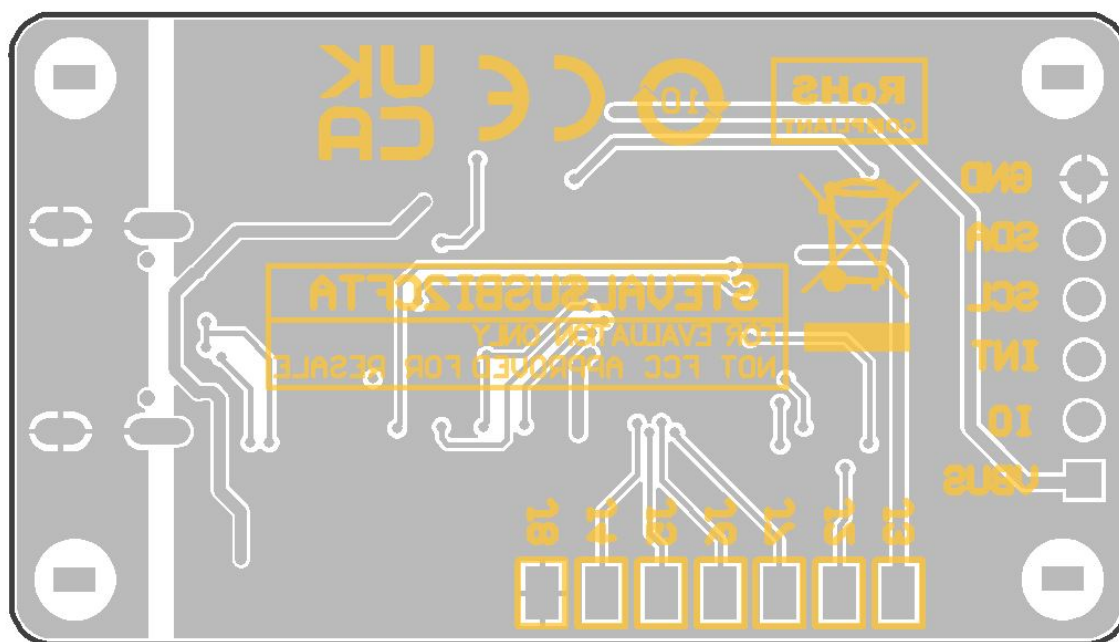


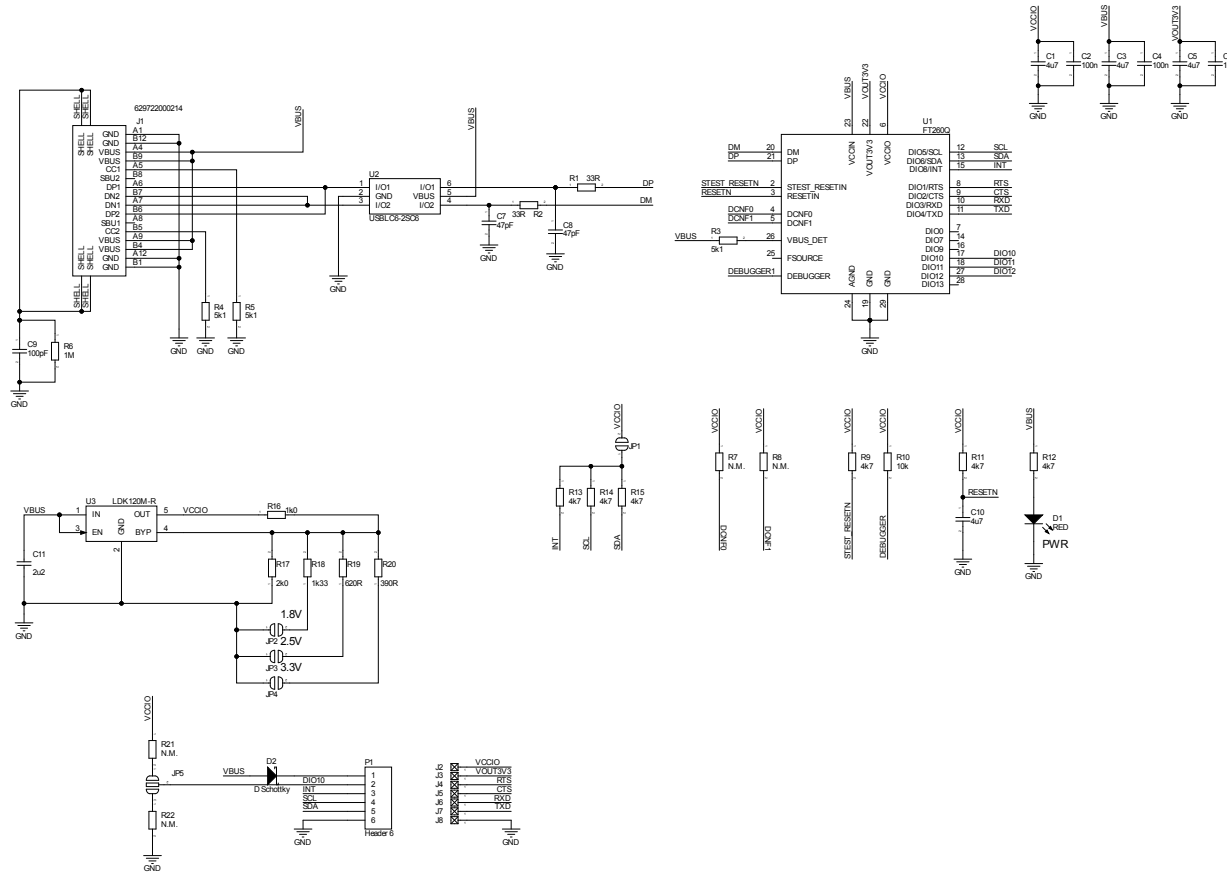
Figure 9. STEVAL-USB2CFT bottom layout



## 5

## Schematic diagrams

Figure 10. STEVAL-USB2CFT circuit schematic



## 6 Bill of materials

**Table 2. STEVAL-USB2CFT bill of materials**

| Item | Q.ty | Ref. | Part/value                     | Description | Manufacturer | Order code                  |
|------|------|------|--------------------------------|-------------|--------------|-----------------------------|
| 1    | 2    | 6    | R9, R11, R12,<br>R13, R14, R15 | 4k7         | Vishay/Dale  | CRCW06034K70JNEC            |
| 2    | 3    | 4    | C1, C3, C5,<br>C10             | 4u7         | Wurth        | 885012106012                |
| 3    | 4    | 3    | C2, C4, C6                     | 100n        | Wurth        | 885012206071                |
| 4    | 5    | 3    | R3, R4, R5                     | 5k1         | Vishay/Dale  | CRCW06035K10FKEAC           |
| 5    | 6    | 2    | C7, C8                         | 47pF        | Wurth        | 885012006055                |
| 6    | 9    | 2    | R1, R2                         | 33R         | Vishay/Dale  | CRCW060333R0JNEB            |
| 7    | 12   | 1    | C9                             | 100pF       | Wurth        | 885012206077                |
| 8    | 13   | 1    | C11                            | 2u2         | Wurth        | 885012106011                |
| 9    | 14   | 1    | D1                             |             | Wurth        | 150060RS75000               |
| 10   | 15   | 1    | D2                             |             | ST           | <a href="#">STPS1L60ZF</a>  |
| 11   | 16   | 1    | J1                             |             | Wurth        | 629722000214                |
| 12   | 18   | 1    | P1                             |             | Wurth        | 61300611021                 |
| 13   | 19   | 1    | R6                             | 1M          | Vishay/Dale  | CRCW06031M00JNEB            |
| 14   | 20   | 1    | R10                            | 10k         | Vishay/Dale  | CRCW060310K0JNEAC           |
| 15   | 21   | 1    | R16                            | 1k0         | Vishay/Dale  | CRCW06031K00JNEC            |
| 16   | 22   | 1    | R17                            | 2k0         | Vishay/Dale  | CRCW06032K00JNEAC           |
| 17   | 23   | 1    | R18                            | 1k33        | Vishay/Dale  | CRCW06031K33FKEA            |
| 18   | 24   | 1    | R19                            | 620R        | Vishay/Dale  | CRCW0603620RFKEAC           |
| 19   | 25   | 1    | R20                            | 390R        | Wishay/Dale  | CRCW0603390RFKEAC           |
| 20   | 26   | 1    | U1                             |             | FTDI         | FT260Q-T                    |
| 21   | 27   | 1    | U2                             |             | ST           | <a href="#">USBLC6-2SC6</a> |
| 22   | 28   | 1    | U3                             |             | ST           | <a href="#">LDK120M-R</a>   |

## 7 Board versions

**Table 3. STEVAL-USBI2CFT versions**

| FG version                       | Schematic diagrams                    | Bill of materials                   |
|----------------------------------|---------------------------------------|-------------------------------------|
| STEVAL\$USBI2CFTA <sup>(1)</sup> | STEVAL\$USBI2CFTA- schematic diagrams | STEVAL\$USBI2CFTA-bill of materials |

1. This code identifies the STEVAL-USBI2CFT expansion board first version. It is printed on the board PCB.

## 8 Regulatory compliance information

### Notice for US Federal Communication Commission (FCC)

For evaluation only; not FCC approved for resale

FCC NOTICE - This kit is designed to allow:

1. Product developers to evaluate electronic components, circuitry, or software associated with the kit to determine whether to incorporate such items in a finished product and
2. Software developers to write software applications for use with the end product.

This kit is not a finished product and when assembled may not be resold or otherwise marketed unless all required FCC equipment authorizations are first obtained. Operation is subject to the condition that this product not cause harmful interference to licensed radio stations and that this product accept harmful interference. Unless the assembled kit is designed to operate under part 15, part 18 or part 95 of this chapter, the operator of the kit must operate under the authority of an FCC license holder or must secure an experimental authorization under part 5 of this chapter 3.1.2.

### Notice for Innovation, Science and Economic Development Canada (ISED)

For evaluation purposes only. This kit generates, uses, and can radiate radio frequency energy and has not been tested for compliance with the limits of computing devices pursuant to Industry Canada (IC) rules.

À des fins d'évaluation uniquement. Ce kit génère, utilise et peut émettre de l'énergie radiofréquence et n'a pas été testé pour sa conformité aux limites des appareils informatiques conformément aux règles d'Industrie Canada (IC).

### Notice for the European Union

This device is in conformity with the essential requirements of the Directive 2014/30/EU (EMC) and of the Directive 2015/863/EU (RoHS).

### Notice for the United Kingdom

This device is in compliance with the UK Electromagnetic Compatibility Regulations 2016 (UK S.I. 2016 No. 1091) and with the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (UK S.I. 2012 No. 3032).

## Revision history

**Table 4. Document revision history**

| Date        | Revision | Changes          |
|-------------|----------|------------------|
| 18-Sep-2023 | 1        | Initial release. |

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