# User Guide

## Sterling-EWB Development Kit - Hardware

Part # 455-00030 and 455-00031

*Version 1.1*

# REVISION HISTORY

| Version | Date | Notes | Contributor(s) | Approver |
|---|---|---|---|---|
| 1.0 | 17 July 2019 | Initial version | Dave Neperud | Jay White |
| 1.1 | 06 Aug 2019 | Fixed typo in EWB development Kit power supply diagram (Figure 4) | Dave Neperud | Jay White |
| | | | | |
| | | | | |
| | | | | |



**Americas**: +1-800-492-2320
**Europe**: +44-1628-858-940
**Hong Kong**: +852 2923 0610

# CONTENTS





**Americas**: +1-800-492-2320
**Europe**: +44-1628-858-940
**Hong Kong**: +852 2923 0610

# 1 Overview

The Laird Sterling-EWB development kit provides a platform for development of embedded Wi-Fi and/or Bluetooth Low Energy (BLE) applications. This document describes the development board hardware, highlighting the setup and interfaces available to maximize user flexibility in developing these applications.

# 2 Laird Sterling-EWB Development Kit Part Numbers

| Part Number | Product Description |
|---|---|
| 455-00030 | Development Kit for 451-00001 module – Integrated chip antenna |
| 455-00031 | Development Kit for the 451-00002 module – w/ u.FL antenna connector |

Applicable to the following Sterling-EWB module part numbers:

| Part Number | Product Description |
|---|---|
| 453-00014 | Sterling-EWB chip antenna module – Integrated antenna |
| 453-00013 | Sterling-EWB U.FL module – External antenna |

# 3 Package Contents

All kits contain the following items:

| | |
|---|---|
| **Development Board** | The development board has the required Sterling-EWB module soldered onto it and exposes all available hardware interfaces. |
| **USB Cable** | USB cable – Type A to micro type B.<br>The cable also provides serial communications via the FTDI USB – RS232 converter chip on the board and powers the development board. |
| **External 2.4GHz dipole antenna** | Supplied with development kit part # 455-00031 only.<br>External antenna, 2 dBi, FlexPIFA (Laird part #001-0014) with integral RF coaxial cable with 100 mm length and IPEX-4 compatible RF connector. |

# 4 Development Kit – Main Development Board

The Sterling-EWB development board is designed to be used directly with the Cypress WICED® SDK. The default configurations provided in this document will enable operation and software development on this board.

## 4.1 Key Features

The EWB development board has the following features:

- Sterling-EWB series module soldered onto the development board
- The following power supply options for powering the development board:
  - USB (micro-USB, type B)
  - External DC supply (4.4 – 10V) – not supplied. Center positive barrel connector or header for bench supply.
  - (4) AA batteries (not supplied)
- Powering the EWB module using a single on-board regulator or separating the MCU and radio supplies to use individual on-board regulators (SW8)
- USB to UART/JTAG bridge (FTDI chip)
- Pin headers for measuring current (EWB module only)
- Selectable boot options
- IO break-out 2.54 mm pitch pin header connectors that bring out all MCU interfaces of the EWB module – UART, SPI, QSPI, I2C, SIO [DIO or AIN (ADCs)], I2S, PWM – and allow for plugging in external modules/sensors
- IO breakout 2.54 mm pitch pin header for direct access to Bluetooth radio on the EWB module.
- DIP switches on all EWB module IO lines running to peripheral devices on the development board to allow disconnection.



**Americas**: +1-800-492-2320
**Europe**: +44-1628-858-940
**Hong Kong**: +852 2923 0610

- J-Link JTAG header for access to EWB JTAG
- 2.54 mm pitch pin header connector and level-shifter supporting connection to an external host MCU (1.8V - 5.0V logic levels).
- On-board Bosch Sensortec BME680 environmental sensor
- Two buttons and four LEDs for user interaction
- One Reset button
- One Wake button
- *Optional* footprint for Apple MFI co-processor (not populated)
- *Optional* footprint for Microchip ATECC608A-SSHDA authentication IC (not populated)

# 5 Understanding the Development Board

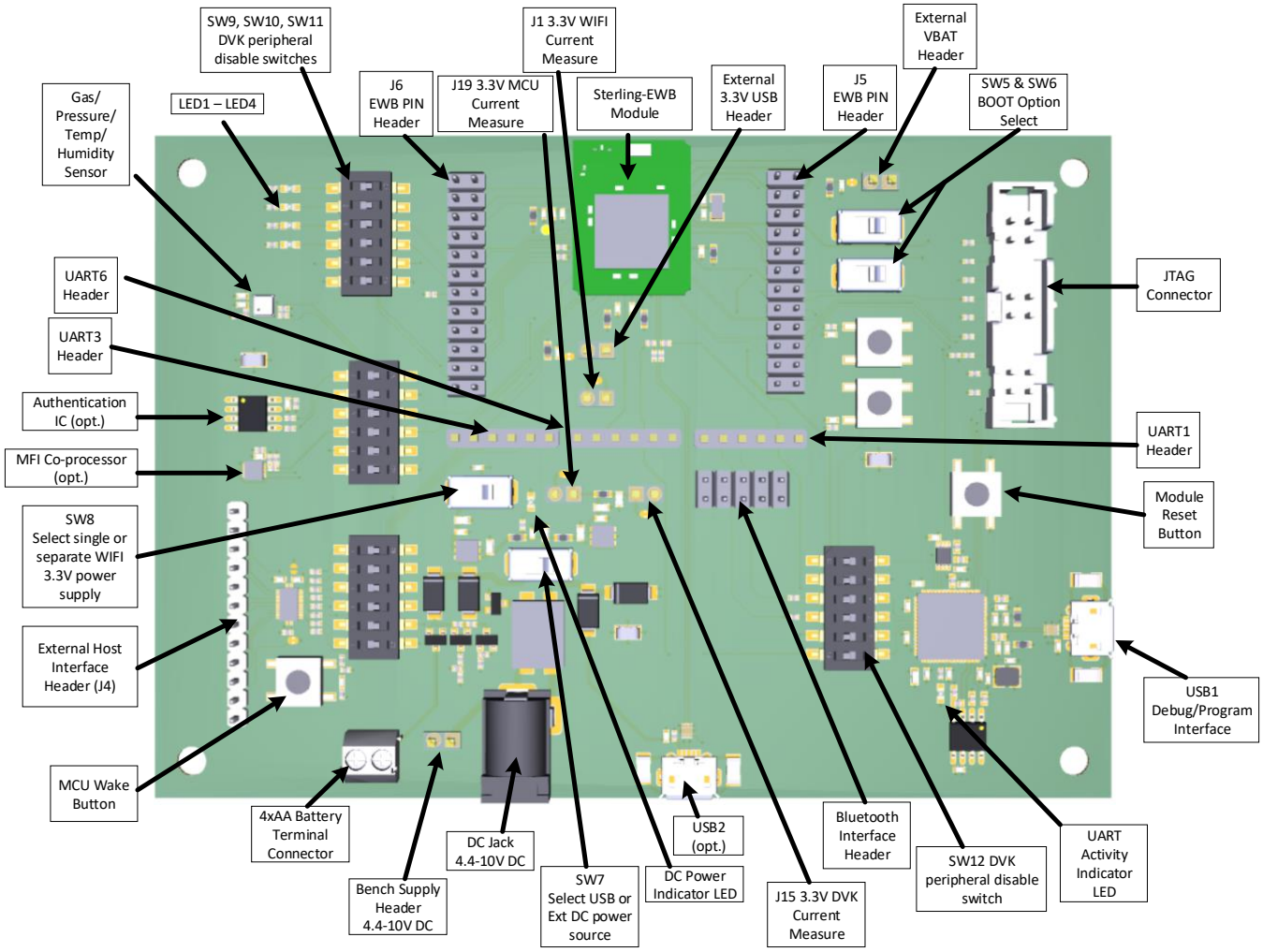


***Figure 1: Development board contents and locations***



**Americas**: +1-800-492-2320
**Europe**: +44-1628-858-940
**Hong Kong**: +852 2923 0610

***Figure 2: Development board 455-00030 (fitted with 453-00014 EWB module with integrated chip antenna)***

## 5.1 EWB-DVK Default Configuration and Jumper Settings

**IMPORTANT!** To ensure correct out-of-the-box configuration, the EWB development board switches must be configured as shown in Figure 3.

The default power connection is using the provided USB cable plugged into the DEBUG/PROGRAM micro-USB port.

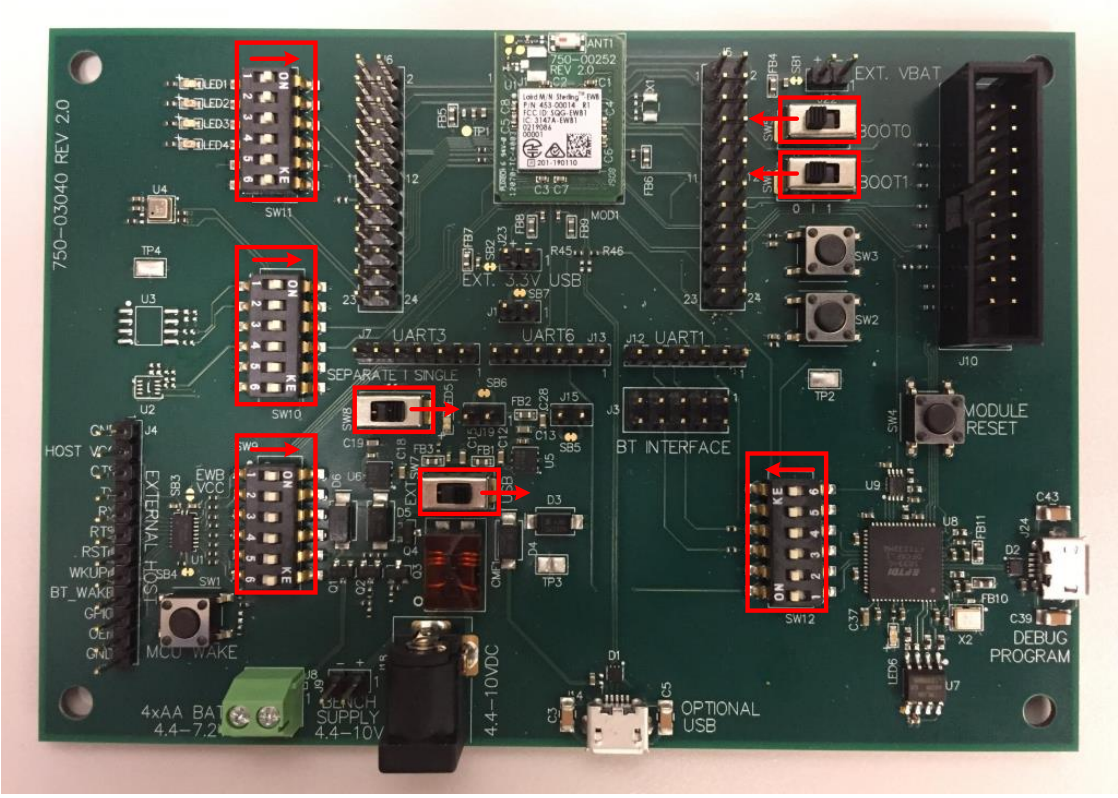


***Figure 3: Correct EWB development board 455-00030 or 455-00031 switch settings (image for 455-00030)***



**Americas**: +1-800-492-2320
**Europe**: +44-1628-858-940
**Hong Kong**: +852 2923 0610

# 6 FUNCTIONAL BLOCKS

## 6.1 Power Supply

Figure 4 shows the EWB development board power supply tree.

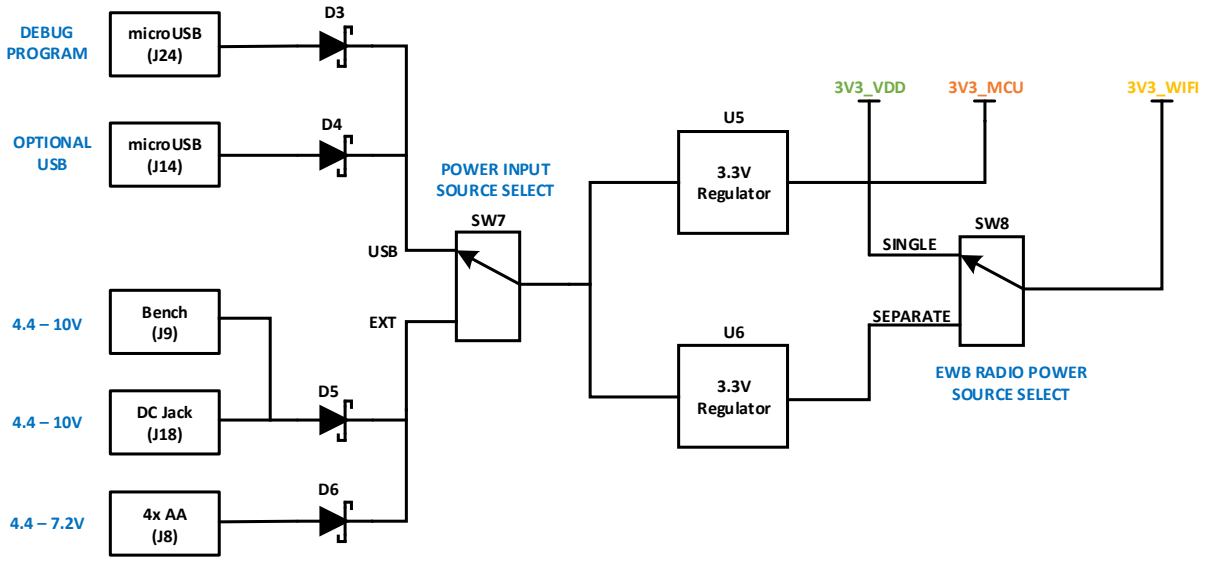


***Figure 4: EWB development Kit power supply***

There are five options for powering the development board:

- DEBUG/PROGRAM USB port (micro-B connector) – If using the FTDI USB-UART path (Default)
- OPTIONAL USB port (micro-B connector) – USB function is not supported/connected on the EWB module, but port can be used as a power input
- External DC supply (4.4V-10V), into DC jack connector (J18)
- External DC bench supply (4.4V-10V) using 2-pin header (J9)
- AA batteries – Four AA batteries connected to terminal block (J8)

The external power sources are fed into selection switch SW7 which allows the selection between either USB sources or the external DC sources.

The external power source is regulated to a fixed 3.3V on the development board. Two regulators are on the development board to provide the option to power the EWB module from a single supply or to separate the supplies for the EWB MCU (3V3_MCU) and radio (3V3_WIFI) sections. The development board peripherals are also powered by U5 (3V3_VDD).

The EWB module power supply inputs are sourced as following on the development board:

**3V3_WIFI**

- VDD_WIFI_PA (pin 9)
- VDD_WIFI_IO (pin 41)
- VDD_WIFI (pin 62)

**3V3_MCU**

- VDD_MCU (pin 37)
- VDD_USB (pin 35)
- VBAT (pin 80)

---

**Note:** The EWB module currently does not support the external USB interface, so the VDD_USB pin is tied directly to 3V3_MCU. The VDD_USB pin supplies power to GPIO PA11 and PA12 on the EWB module.



**Americas**: +1-800-492-2320
**Europe**: +44-1628-858-940
**Hong Kong**: +852 2923 0610

**Note:** The development board connects the VBAT pin directly to 3V3_MCU. An external battery voltage can be applied to the EWB module by cutting SB1 to remove the connection to 3V3_MCU and applying a battery voltage to J22 (Figure 5).

The VBAT pin powers the battery power (RTC and backup registers) domain only when VDD is not present.

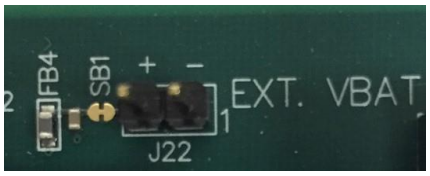


***Figure 5: External VBAT power connector***

## 6.2 Module Reset Button

The development board Module Reset button (SW4) connects directly to the EWB MICRO_RSTN pin and enables manual reset of the module MCU when pressed.

## 6.3 USB Programming and Debug Interface

The micro-USB connector J24 is used in conjunction with a FTDI FT2232H multipurpose USB UART/FIFO IC on the development board to provide JTAG programming and UART1 serial port access to the STM32F412 MCU on the EWB module.

The FT2232H has an external EEPROM which is pre-programmed with the custom VID (0x0A5C) and PID (0x43FA) to enable the USB port to interface with the Cypress WICED® software development kit as well as provide a COM port for monitoring the debug output of the Laird Sterling-EWB demo application.

## 6.4 Boot Option Configuration Switches

The EWB development board boot option is configured by setting SW5 and SW6 (Figure 6).

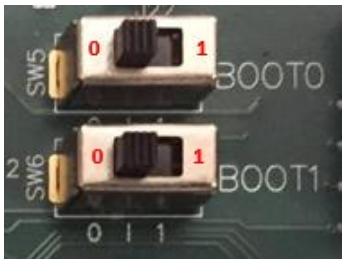


***Figure 6: BOOT configuration switches***

***Table 1: EWB boot source configuration***

| SW5 (BOOT 0) position | SW5 (BOOT 1) position | Boot Source |
|---|---|---|
| 0 | 0 or 1 | EWB Module boots from embedded **User Flash** (Default Setting) |
| 1 | 1 | EWB Module boots from **Embedded SRAM** |
| 1 | 0 | EWB Module boots from **System Memory** |

## 6.5 DVK Disconnect Switches

The development board contains SPST DIP switches (SW9 – SW12) placed in-line with the EWB module I/O lines that connect to peripheral devices on the board. This functionality is provided to maximize flexibility, allowing the user to disconnect any EWB module I/O used by the development board, re-assign their functionality, and use them for development purposes.



**Americas**: +1-800-492-2320
**Europe**: +44-1628-858-940
**Hong Kong**: +852 2923 0610

## 6.6 UART Interfaces

The EWB module is configurable for up to three UART interfaces which can be accessed through headers J7, J12, and J13 on the development board.

Four-wire UART interfaces (TX, RX, CTS, RTS) are available on J12 (UART1) and J7 (UART3). J13 (UART6) only provides a 2-wire interface (TX, RX).

**Note:** UART1 is also driven by the FTDI FT2232H multipurpose USB UART IC to provide a terminal COM port connection available at the micro-USB port (J24). To enable use of a direct external UART connection at J12, SW12 positions 1 – 4 must be switched to the OFF position.

The UART connections to the EWB module are shown in Table 2.

***Table 2: EWB pin/UART connections available on development board***

| UART1 (J12) | UART1 (J12) | UART3 (J7) | UART6 (J13) |
|---|---|---|---|
| UART_TX (output) | PA9 | PD8 | PC6 |
| UART_RX (input) | PA10 | PC5 | PC7 |
| UART_RTS (output) | PA12 | PB14 | N/A |
| UART_CTS (input) | PA11 | PB13 | N/A |

The UART header pinouts are designed to be used with FTDI USB-UART TTL (3.3V) converter cables (found at http://www.ftdichip.com/Products/Cables/USBTTLSerial.htm). One example is FTDI part TTL-232R-3V3.

## 6.7 Indicator LEDs

The development board includes six indicator LEDs.

Four LEDs (**LED1 – LED4**) are for development use and are connected to the MCU port of the EWB as indicated in Table 3.

***Table 3: EWB LEDs and signal mapping***

| Designator | Color | STM32F412 Port Name |
|---|---|---|
| LED1 | Green | PB12 |
| LED2 | Red | PB15 |
| LED3 | Blue | PE7 |
| LED4 | Red | PE8 |

**Note:** The MCU connections to the LEDs can be removed by switching positions 1 – 4 of SW11 to the “OFF” position.

**LED5** (Green) indicates when DC power is applied to the development board 3.3V regulator inputs.

**LED6** (Green) indicates UART activity with the FTDI FT2232H USB UART/FIFO IC.

## 6.8 Push Buttons

SW2 and SW3 are SPST-NO tact switches that when pressed will provide a low logic level input to the MCU port of the EWB as indicated in Table 4.

***Table 4: EWB button signal mapping***

| Designator | STM32F412 Port Connection |
|---|---|
| SW2 | PC13 |
| SW3 | PD1 |

**Note:** The EWB MCU connection to the buttons can be removed by switching positions 3(SW3) and 6(SW2) of SW10 to the OFF position.



**Americas**: +1-800-492-2320
**Europe**: +44-1628-858-940
**Hong Kong**: +852 2923 0610

## 6.9 MCU Wake Button

SW1 is SPST-NO tact switch connected to Port PA0 on the EWB STM32F412 MCU to provide the ability to use the WKUP function of the MCU to wake from Standby, Stop, and Sleep modes of operation.

## 6.10 BME680 Gas/Pressure/Temperature/Humidity Sensor

The development board includes the Bosch Sensortec BME680 air quality sensor connected to the EWB MCU I2C2 interface bus via pins PB10 (SCL) and PB11 (SDA). The I2C signal traces are pulled high on the development board.

## 6.11 External Host Interface

The EWB development board provides the capability to connect to an external host MCU that uses 1.8V - 5.0V logic levels.

The following peripherals and pin assignments of the EWB STM32F412 MCU are available on header J4 for connection to an external microcontroller host platform (Table 5).

***Table 5: External host Interface connections***

| J4 Pin # | Name | Function | Type | EWB STM32F412 Port |
|---|---|---|---|---|
| 1 | GND | Ground | I | - |
| 2 | VCC_EXT_MCU | External Host I/O Voltage[1] | I | - |
| 3 | UART_CTS | CTS flow control (to external host) | O | UART3_RTS/PB14 |
| 4 | UART_TX | TX Data (from external host) | I | UART3_RX/PC5 |
| 5 | UART_RX | RX Data (to external host) | O | UART3_TX/PD8 |
| 6 | UART_RTS | RTS flow control (from external host) | I | UART3_CTS/PB13 |
| 7 | RESETn | EWB MCU reset | I | MICRO_RST_N |
| 8 | WKUPn | EWB MCU wake | I | MICRO_WKUP/PA0 |
| 9 | BT_WAKE | Wake up Signal indicating EWB Bluetooth device requires attention | O | BT_HOST_WAKE |
| 10 | GPIO | General Purpose I/O | I/O | PE5 |
| 11 | OEn | Level Shifter enable (active low)[2] | I | - |
| 12 | GND | Ground | I | - |

**Note: By default, EWB 3V3_MCU power is not provided to the level shifter interface IC on the development board.**

[1] Connect EWB module 3V3_MCU to the level shifter and set the logic level for the module interface lines by shorting solder bridge SB3 on the development board (Figure 7).

[2] The OEn line is held low by default on the development board. J4 - pin 11 provides the option for the external host microcontroller to control this line. To allow this capability, the shorted solder bridge SB4 needs to be cut on the development board (Figure 7).



**Americas**: +1-800-492-2320
**Europe**: +44-1628-858-940
**Hong Kong**: +852 2923 0610

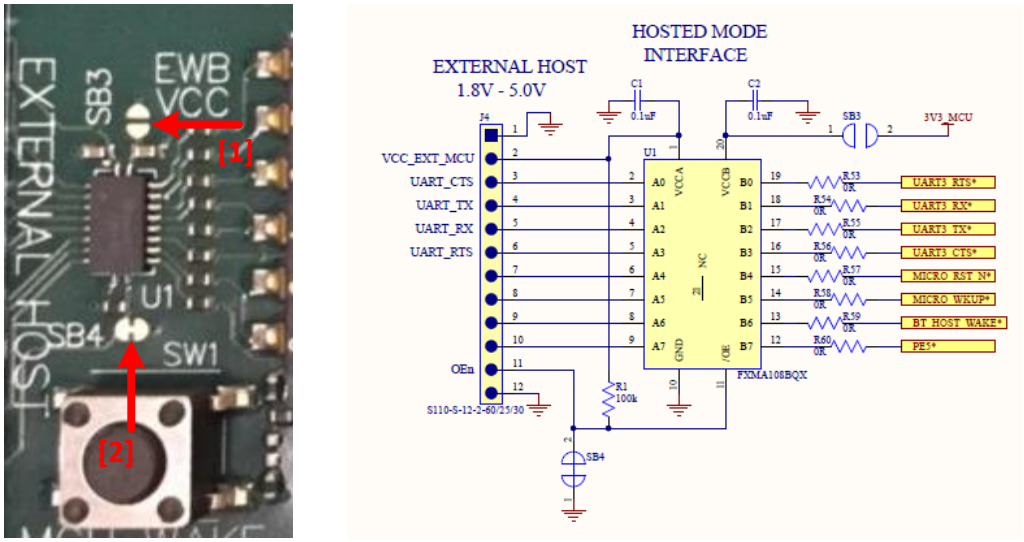


***Figure 7: External HOST interface schematic and location of solder bridge modifications***



**Americas**: +1-800-492-2320
**Europe**: +44-1628-858-940
**Hong Kong**: +852 2923 0610

# 7 Breakout Connector Pinouts

## 7.1 Trace debugging (JTAG) Interface

The development board provides access to the EWB module J-Link JTAG interface via connector **J10** (Figure 8).

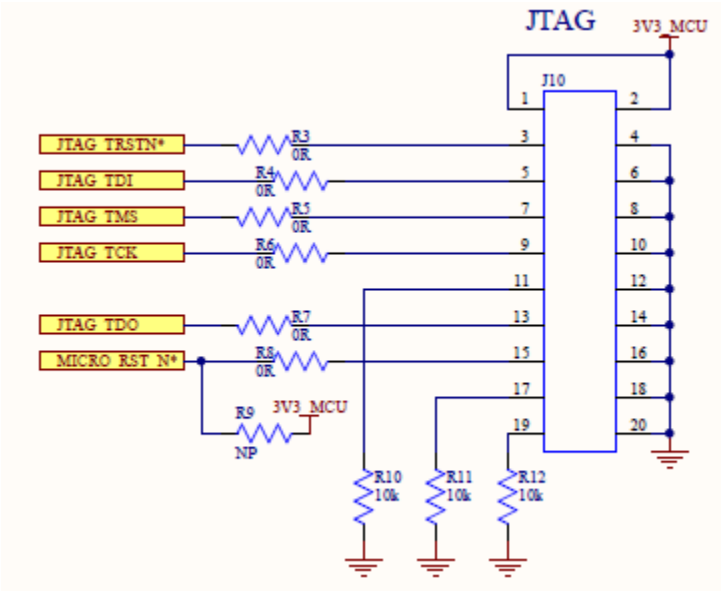


***Figure 8: JTAG Interface schematic***

## 7.2 Bluetooth Interface

Development board header **J3** provides access to the Bluetooth radio on the EWB module (Figure 9).

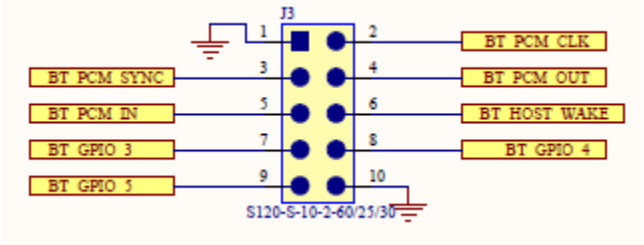


***Figure 9: Bluetooth Interface PIN assignments***

### 7.2.1 Bluetooth PCM Audio Interface

Four PCM audio connections are available.

- BT_PCM_CLK, BT_PCM_IN, BT_PCM_OUT, and BT_PCN_SYNC
- BT_PCM_CLK and BT_PCN_SYNC can be master (output) or slave (input).

### 7.2.2 Bluetooth GPIO Interface

Three Bluetooth General Purpose I/O lines are available for expansion capability.

### 7.2.3 Bluetooth Wake Interface

BT_HOST_WAKE output signal pin indicates when the EWB module Bluetooth radio requires attention.



**Americas**: +1-800-492-2320
**Europe**: +44-1628-858-940
**Hong Kong**: +852 2923 0610

## 7.3 PIN Breakout Headers

Access to the remaining EWB module signal pins is available on 0.1-inch pitch header connectors J5 and J6 (Figure 10 and Table 6).

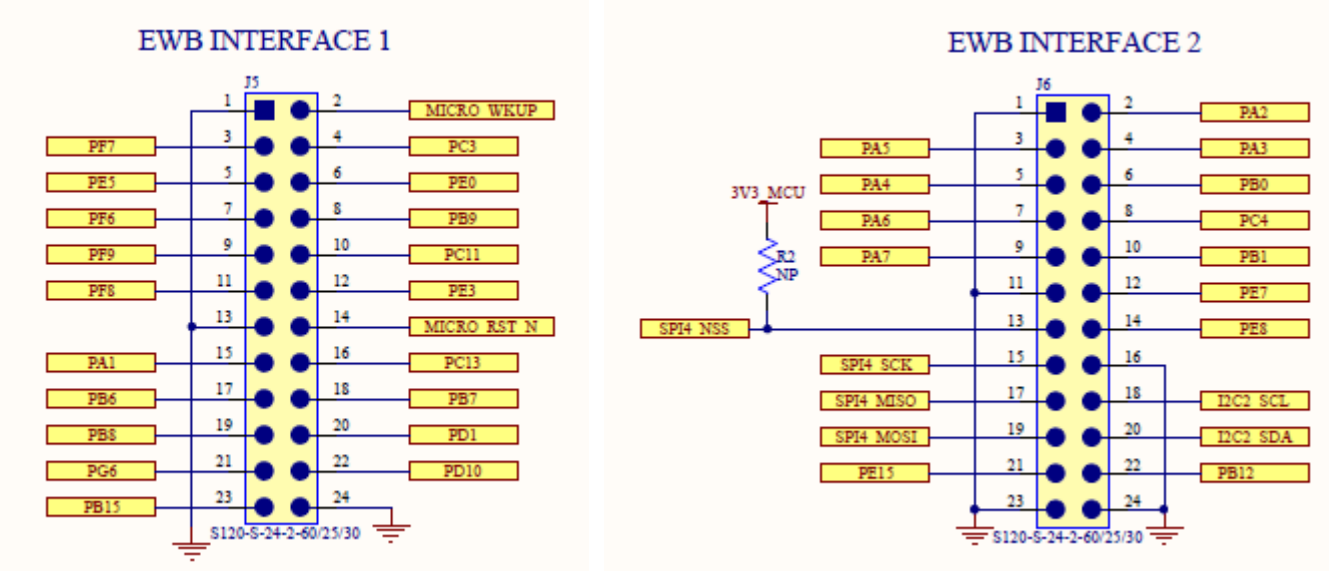


***Figure 10: EWB breakout headers***

***Table 6: J5 and J6 pin mapping***

| Pin | Connection | Pin | Connection |
|---|---|---|---|
| 1 | GND | 2 | MICRO_WKUP/PA0 |
| 3 | PF7 | 4 | PC3 |
| 5 | PE5 | 6 | PE0 |
| 7 | PF6 | 8 | PB9 |
| 9 | PF9 | 10 | PC11 |
| 11 | PF8 | 12 | PE3 |
| 13 | GND | 14 | MICRO_RST_N |
| 15 | PA1 | 16 | PC13 |
| 17 | PB6 | 18 | PB7 |
| 19 | PB8 | 20 | PD1 |
| 21 | PG6 | 22 | PD10 |
| 23 | PB15 | 24 | GND |

| Pin | Connection | Pin | Connection |
|---|---|---|---|
| 1 | GND | 2 | PA2 |
| 3 | PA5 | 4 | PA3 |
| 5 | PA4 | 6 | PB0 |
| 7 | PA6 | 8 | PC4 |
| 9 | PA7 | 10 | PB1 |
| 11 | GND | 12 | PE7 |
| 13 | SPI4_NSS/PE11 | 14 | PE8 |
| 15 | SPI4_SCK/PE12 | 16 | GND |
| 17 | SPI4_MISO/PE13 | 18 | I2C2_SCL/PB10 |
| 19 | SPI4_MOSI/PE14 | 20 | I2C2_SDA/PB11 |
| 21 | PE15 | 22 | PB12 |
| 23 | GND | 24 | GND |



**Americas**: +1-800-492-2320
**Europe**: +44-1628-858-940
**Hong Kong**: +852 2923 0610

# 8 Other Features

## 8.1 Current Consumption Measurements

The provided headers on the development board allow you to break the power supply lines and measure current consumption.

J1 (3V3_WIFI), J19 (3V3_MCU), and J15 (3V3_VDD) are available to connect an ammeter between the two pins. To enable a current measurement, the shorted solder bridge at each header will need to be cut first (Figure 11).

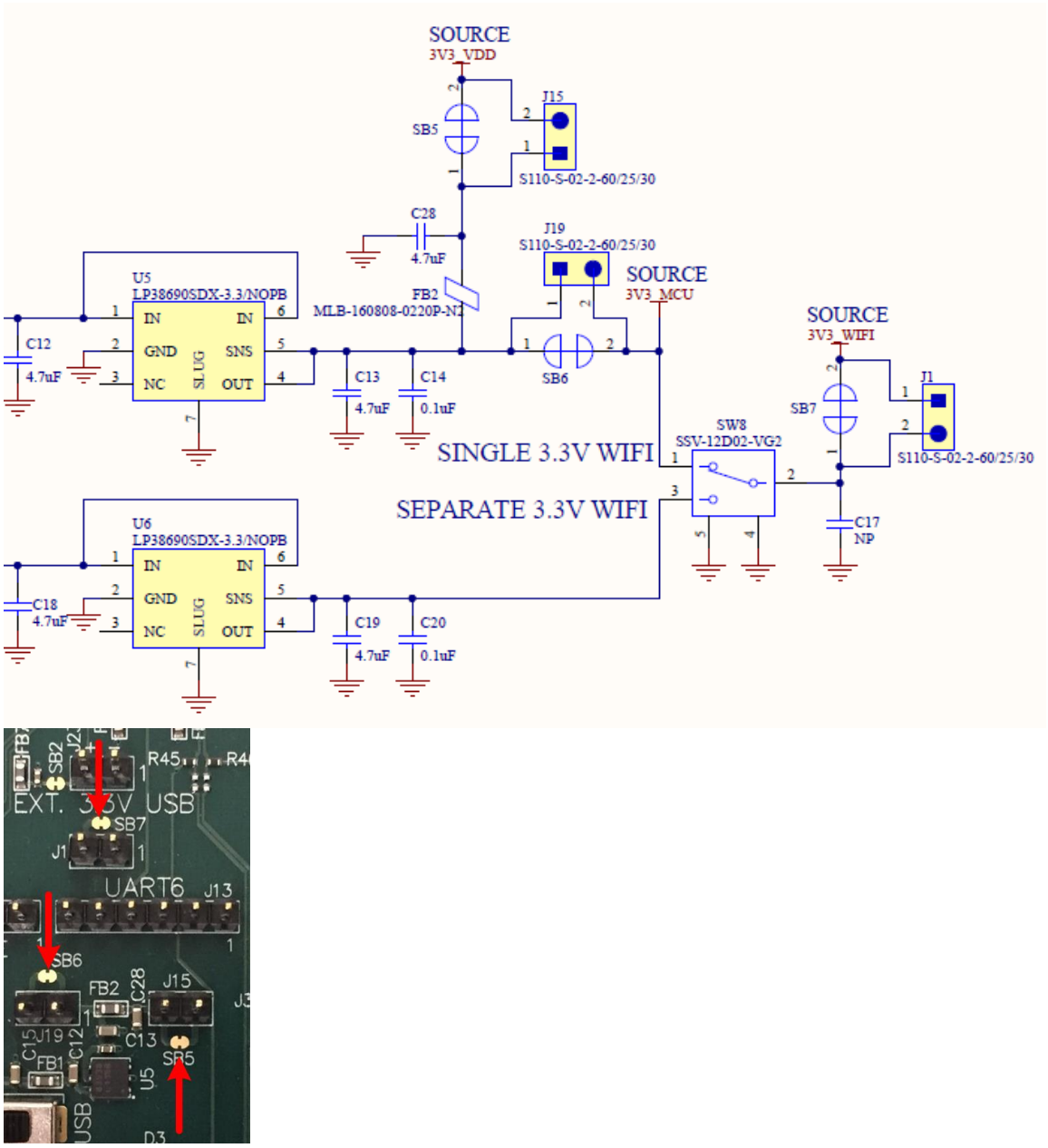


***Figure 11: Current measurement schematic and PCB modifications***



**Americas**: +1-800-492-2320
**Europe**: +44-1628-858-940
**Hong Kong**: +852 2923 0610

# 9 APPENDIX A – EWB MODULE PIN TO MCU PORT MAPPING

The mapping of the EWB module pinout to the STM32F412 MCU ports is provided in Table 7.

***Table 7: EWB module to STM32 port mapping***

| Module Pin # | Name | STM32 Port |
|---|---|---|
| 2 | MICRO_ADC_IN2 | PA2 |
| 3 | MICRO_SPI1_SCK[1] | PA5 |
| 4 | MICRO_SPI1_NSS[1] | PA4 |
| 5 | MICRO_SPI1_MISO[1] | PA6 |
| 6 | MICRO_ADC_IN3 | PA3 |
| 7 | MICRO_GPIO_5 | PB0 |
| 8 | QUADSPI_BK2_IO2 | PC4 |
| 12 | QUADSPI_BK2_IO3 | PC5 |
| 13 | MICRO_SPI1_MOSI[1] | PA7 |
| 14 | BOOT1 | PB2 |
| 15 | QUADSPI_CLK | PB1 |
| 16 | QUADSPI_BK2_IO0 | PE7 |
| 17 | MICRO_SPI4_NSS | PE11 |
| 18 | QUADSPI_BK2_IO1 | PE8 |
| 19 | MICRO_SPI4_SCK | PE12 |
| 20 | MICRO_I2C2_SCL | PB10 |
| 21 | MICRO_SPI4_MISO | PE13 |
| 22 | MICRO_I2C2_SDA | PB11 |
| 23 | MICRO_SPI4_MOSI | PE14 |
| 24 | MICRO_GPIO_16 | PE15 |
| 26 | MICRO_SPI2_NSS | PB12 |
| 27 | MICRO_SPI2_SCK | PB13 |
| 28 | MICRO_SPI2_MISO | PB14 |
| 30 | MICRO_SPI2_MOSI | PB15 |
| 31 | MICRO_GPIO27 | PD8 |
| 32 | MICRO_GPIO25 | PD10 |
| 36 | QUADSPI_BK1_NCS | PG6 |
| 38 | MICRO_I2S2_CK | PC7 |
| 39 | MICRO_I2S2_MCK | PC6 |
| 42 | MICRO_USART1_RX | PA10 |
| 43 | MICRO_USART1_TX | PA9 |
| 44 | MICRO_GPIO_26 | PD1 |
| 45 | MICRO_GPIO_28 | PB8 |
| 46 | MICRO_I2C1_SDA | PB7 |
| 47 | MICRO_USART1_CTS | PA11 |



**Americas**: +1-800-492-2320
**Europe**: +44-1628-858-940
**Hong Kong**: +852 2923 0610

| Module Pin # | Name | STM32 Port |
|---|---|---|
| 48 | MICRO_I2C1_SCL | PB6 |
| 49 | MICRO_USART1_RTS | PA12 |
| 50 | MICRO_JTAG_TDI | PA15 |
| 51 | MICRO_JTAG_TMS | PA13 |
| 53 | BOOT0 | BOOT0 |
| 54 | MICRO_JTAG_TDO | PB3 |
| 55 | PC13 | PC13 |
| 56 | MICRO_ADC_IN1 | PA1 |
| 57 | MICRO_JTAG_TCK | PA14 |
| 60 | MICRO_RST_N | NRST |
| 64 | MICRO_JTAG_TRSTN | PB4 |
| 65 | MICRO_GPIO_0 | PE3 |
| 66 | QUADSPI_BK1_IO0 | PF8 |
| 67 | QUADSPI_BK2_NCS | PC11 |
| 68 | QUADSPI_BK1_IO1 | PF9 |
| 69 | MICRO_I2S2_WS | PB9 |
| 70 | QUADSPI_BK1_IO3 | PF6 |
| 71 | MICRO_GPIO_30 | PE0 |
| 72 | OSC_32K_IN | PC14 |
| 73 | MICRO_I2S_DI | PE5 |
| 74 | OSC_32K_OUT | PC15 |
| 76 | MICRO_WKUP | PA0 |
| 78 | QUADSPI_BK1_IO2 | PF7 |
| 79 | MICRO_I2S2_SD | PC3 |

[1]SPI1 is used for the internal EWB module 16 Mb flash communication (PA4, PA5, PA6, and PA7).



**Americas**: +1-800-492-2320
**Europe**: +44-1628-858-940
**Hong Kong**: +852 2923 0610

# 10 APPENDIX B – EWB/STM32F412 ALTERNATIVE FUNCTIONS

| STM32 Port | USART | | | SPI | | | | | | I2C | | | I2S | | | ADC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 3 | 6 | 1 | 2 | 3 | 4 | 5 | QSPI | 1 | 2 | 3 | 1 | 2 | 3 | |
| BOOT0 | | | | | | | | | | | | | | | | |
| NRST | | | | | | | | | | | | | | | | |
| PA0 | | | | | | | | | | | | | | | | 0 |
| PA1 | | | | | | | MOSI | | BK1_IO3 | | | | | | | 1 |
| PA2 | | | | | | | | | | | | | | CKIN | | 2 |
| PA3 | | | | | | | | | | | | | | MCK | | 3 |
| PA4 | | | | NSS | | NSS | | | | | | | WS | | WS | 4 |
| PA5 | | | | SCK | | | | | | | | | CK | | | 5 |
| PA6 | | | | MISO | | | | | BK2_IO0 | | | | MCK | | | 6 |
| PA7 | | | | MOSI | | | | | BK2_IO1 | | | | SD | | | 7 |
| PA9 | TX | | | | | | | | | | | | | | | |
| PA10 | RX | | | | | | | MOSI | | | | | | | | |
| PA11 | CTS | | TX | | | | MISO | | | | | | | | | |
| PA12 | RTS | | RX | | | | | MISO | | | | | | | | |
| PA13 | | | | | | | | | | | | | | | | |
| PA14 | | | | | | | | | | | | | | | | |
| PA15/ BOOT1 | - | | | - | | | | | | - | | - | | | | |
| PB0 | | | | | | | | SCK | | | | | | | | 8 |
| PB1 | | | | | | | NSS | | CLK | | | | | | | 9 |
| PB2 | | | | | | | | | | | | | | | | |
| PB3 | - | | | - | | | | | | - | | - | | | | |
| PB4 | - | | | - | | | | | | - | | - | | | | |
| PB6 | TX | | | | | | | | BK1_NCS | SCL | | | | | | |
| PB7 | RX | | | | | | | | | SDA | | | | | | |
| PB8 | | | | | | | | MOSI | | SCL | | SDA | | | | |
| PB9 | | | | | NSS | | | | | SDA | SDA | | | WS | | |
| PB10 | | TX | | | SCK | | | | | | SCL | | | CS | MCK | |
| PB11 | | RX | | | | | | | | | SDA | | | CKIN | | |
| PB12 | | CK | | | NSS | SCK | NSS | | | | | | | WS | | |
| PB13 | | CTS | | | SCK | | SCK | | | | | | | CK | | |
| PB14 | | RTS | | | MISO | | | | | | | | | eSD | | |
| PB15 | | | | | MOSI | | | | | | | | | SD | | |
| PC3 | | | | | MOSI | | | | | | | | | SD | | 13 |
| PC4 | | | | | | | | | BK2_IO2 | | | | MCK | | | 14 |
| PC5 | | RX | | | | | | | BK2_IO3 | | | | | | | 15 |
| PC6 | | | TX | | | | | | | | | | | MCK | | |
| PC7 | | | RX | | SCK | | | | | | | | | CK | MCK | |
| PC11 | | RX | | | | MISO | | | BK2_NCS | | | | | | eSD | |
| PC13 | | | | | | | | | | | | | | | | |



**Americas**: +1-800-492-2320
**Europe**: +44-1628-858-940
**Hong Kong**: +852 2923 0610

| STM32 Port | USART | | | SPI | | | | | | I2C | | | I2S | | | ADC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 3 | 6 | 1 | 2 | 3 | 4 | 5 | QSPI | 1 | 2 | 3 | 1 | 2 | 3 | |
| PC14 | | | | | | | | | | | | | | | | |
| PC15 | | | | | | | | | | | | | | | | |
| PD1 | | | | | | | | | | | | | | | | |
| PD8 | | TX | | | | | | | | | | | | | | |
| PD10 | | CK | | | | | | | | | | | | | | |
| PE0 | | | | | | | | | | | | | | | | |
| PE3 | | | | | | | | | | | | | | | | |
| PE5 | | | | | | | MISO | MISO | | | | | | | | |
| PE7 | | | | | | | | | BK2_IO0 | | | | | | | |
| PE8 | | | | | | | | | BK2_IO1 | | | | | | | |
| PE11 | | | | | | | NSS | NSS | | | | | | | | |
| PE12 | | | | | | | SCK | SCK | | | | | | | | |
| PE13 | | | | | | | MISO | MISO | | | | | | | | |
| PE14 | | | | | | | MOSI | MOSI | | | | | | | | |
| PE15 | | | | | | | | | | | | | | | | |
| PF6 | | | | | | | | | BK1_IO3 | | | | | | | |
| PF7 | | | | | | | | | BK1_IO2 | | | | | | | |
| PF8 | | | | | | | | | BK1_IO0 | | | | | | | |
| PF9 | | | | | | | | | BK1_IO1 | | | | | | | |
| PG6 | | | | | | | | | BK1_NCS | | | | | | | |

**Note:** USART2 is used internally on the EWB module for MCU to radio communication and is not available.

SPI1 is used for the internal EWB module 16-Mb flash communication (PA4, PA5, PA6, and PA7).

# 11 Additional Documentation

Laird offers a variety of documentation and ancillary information to support our customers through the initial evaluation process and ultimately into mass production. Additional documentation can be accessed from the Sterling-EWB Product Page: https://www.lairdconnect.com/wireless-modules/wi-fi-bt-modules/sterling-ewb-iot-module

For any additional questions or queries, or to receive technical support for this Development Kit or for the Sterling-EWB module, please contact Embedded Wireless Solutions Support: https://www.lairdconnect.com/resources/support

# X-ON Electronics

Largest Supplier of Electrical and Electronic Components

***Click to view similar products for*** WiFi Development Tools (802.11) ***category:***

***Click to view products by*** Laird Connectivity ***manufacturer:***

Other Similar products are found below :

102110037 102110057 102990944 102991009 102991025 102991180 102991183 102991310 103990284 105990071 110020051 113020010 113020011 113020031 113030008 113990577 113990580 114991271 114991272 2471 2598 2610019225001 2999 3010 3031 3032 3044 3046 3060 3061 3213 32420D 32420S 3269 3409 3410 3411 3591 36 3606 3619 3653 3654 4000 410-377 4172 4176 4177 4178 4201