UM1448
User Manual

STEVAL-MKI115V1
Bluetooth® extension board for STEVAL-MKI109V1

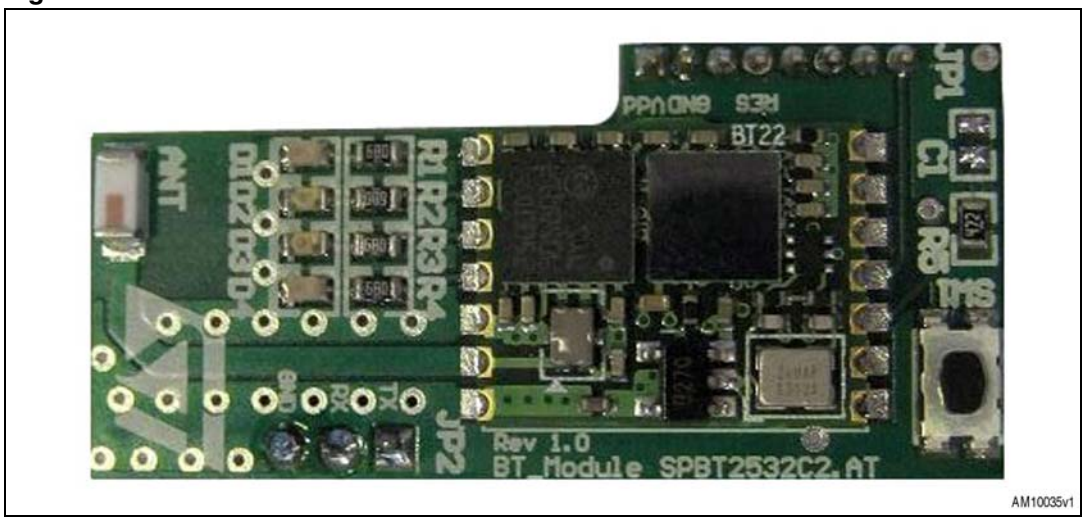
Introduction

The STEVAL-MKI115V1 is a demonstration kit based on Bluetooth® technology, designed to make the STEVAL-MKI109v1 board wireless, a significant advantage which allows using the sensors without a connection cable.

The STEVAL-MKI115V1 is composed of the STEVAL-SPBT2ATV2 module and the antenna.

The module allows the user to create a Bluetooth link with simple AT commands. The AT command list is detailed in the SPBT2532C2.AT datasheet (available from *www.st.com*).

Figure 1. STEVAL-MKI115V1



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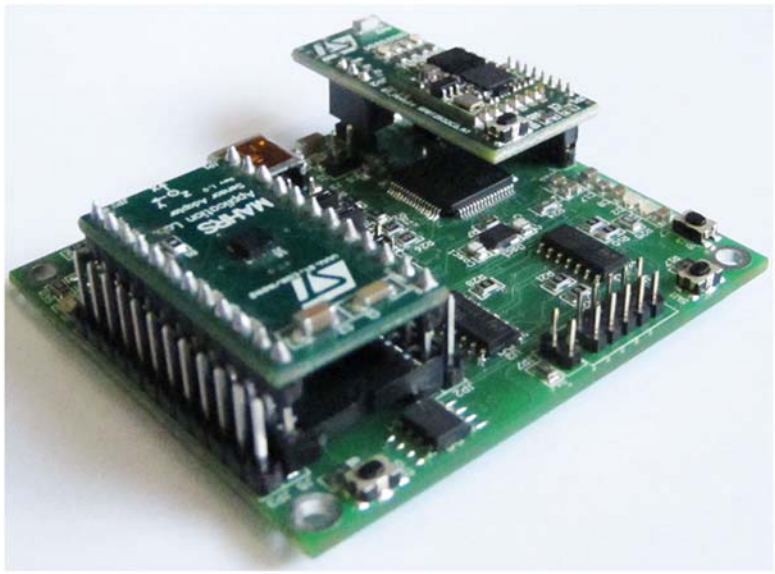
1 Description

The STEVAL-MKI115v1 has been designed to be plugged into the STEVAL-MKI109v1 (starting from firmware version 2.0) which allows a wireless connection (*Figure 2*). Thanks to the SPBT2ATV2 module mounted on the board and its AT commands, establishing a Bluetooth connection between the STEVAL-MKI109v1 and other Bluetooth devices (PC, mobile phones, etc) will be very easy.

The STEVAL-MKI109v1+STEVAL-MKI115v1 (FW version 2.x) are fully compatible with “Unico” PC software, allowing the user to evaluate every sensor adapter board wirelessly (see *Section 7.1: Unico integration* for more details).

The STEVAL-MKI109v1 can be upgraded to version 2.x through the DFU (device firmware upgrade). See UM0412 for more details.

Figure 2. STEVAL-MKI115V1 connected to STEVAL-MKI109V1



2 Recommended operating conditions

Table 1. Recommended operating conditions

Symbol	Parameter	Min.	Typ	Max	Unit
VDD	Board supply voltage	-	3	-	V

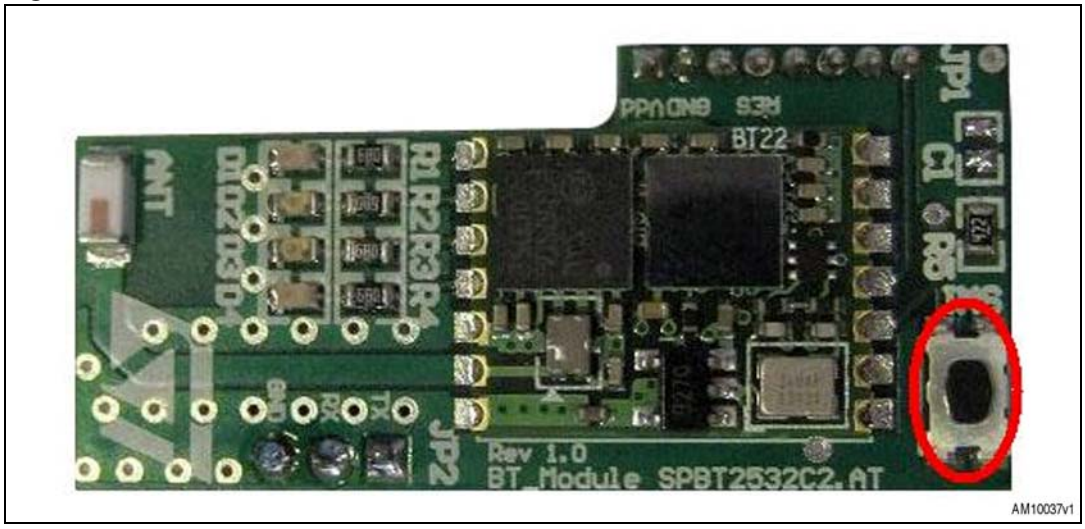
3 Reset

A reset button SW1 is present on the module. When SW1 is pushed, the SPBT2532C2.AT module is reset.

The reset pin can also be driven by an open-drain microcontroller pin.

If the reset button is pressed while the STEVAL-MKI109V1 is communicating, the communication is blocked and the STEVAL-MKI109V1 must be reset.

Figure 3. Reset button



4 I/O connections

The STEVAL-MKI115V1 extension board has two external connectors (JP1 and JP2) that allow the module to be connected to the STEVAL-MKI109v1 (*Figure 4*).

See *Table 2* for the description of the pin connectors.

Figure 4. STEVAL-MKI115V1 connectors

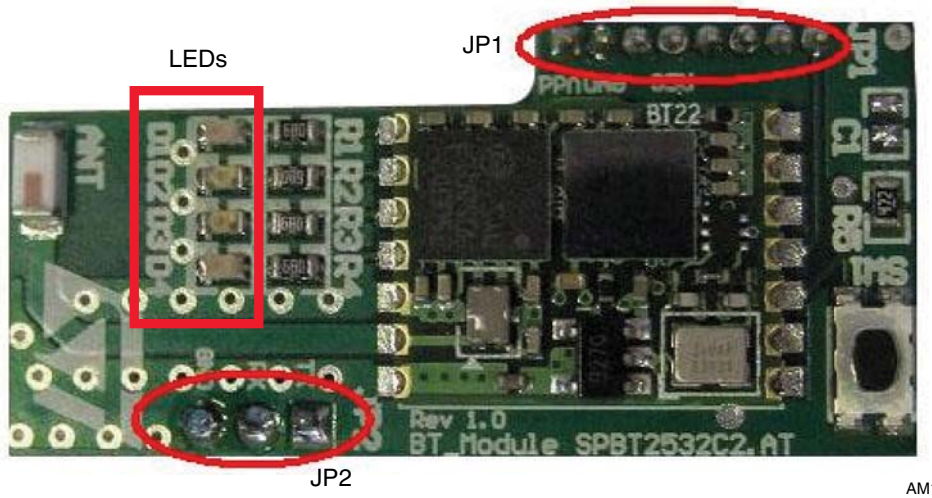
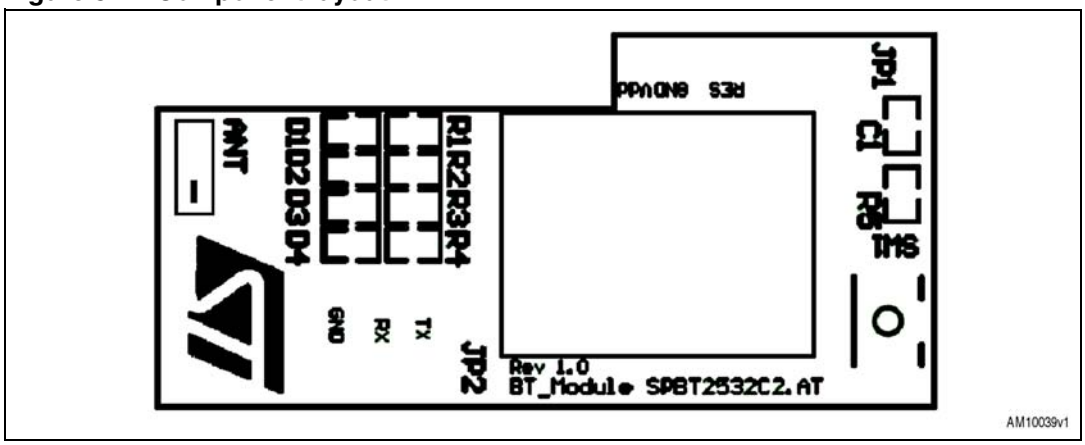


Table 2. External connectors

Connector		Description
JP1	1	VDD
	2	GND
	3	RTS
	4	RESET PIN
	5	Not connected
	6	Not connected
	7	Not connected
	8	CTS
JP2	1	UART TX
	2	UART RX
	3	GND

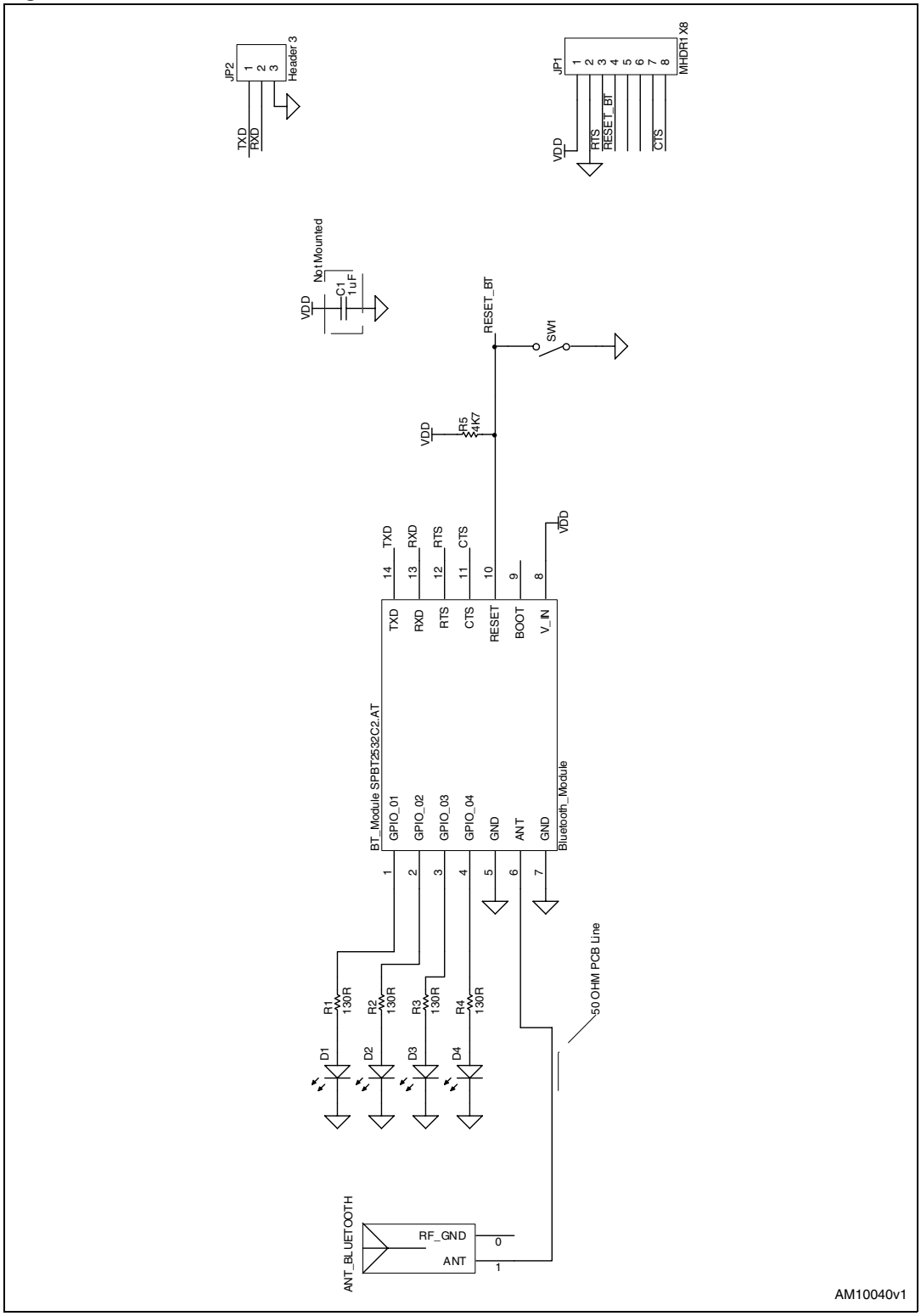
5 Layout

Figure 5. Component layout



6 Schematic

Figure 6. Module schematic



7 STEVAL-MKI109V1 integration and usage

The STEVAL-MKI115V1 connection must be done through the STEVAL-MKI109V1 JP12 and JP8 connectors (see *Figure 7* and *8*). They bring the power supply and data signal to the module.

Figure 7. STEVAL-MKI109V1 connectors

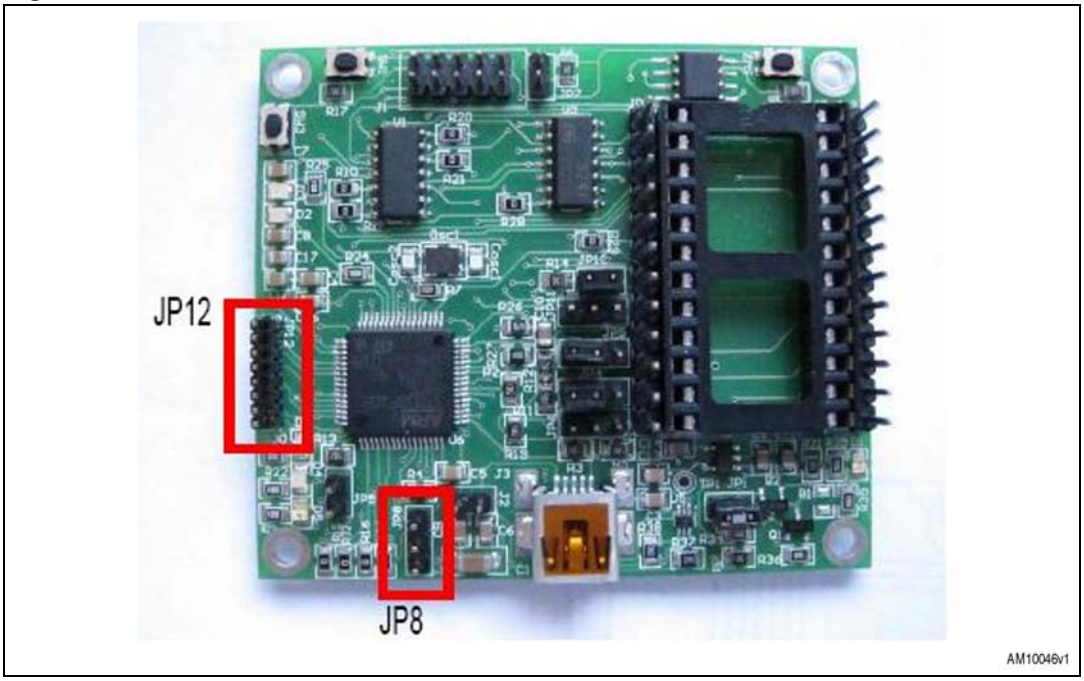
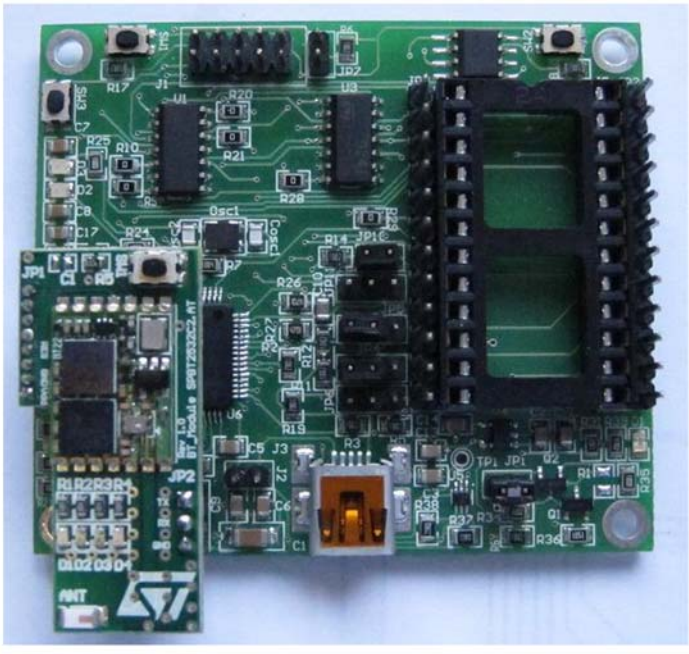


Figure 8. STEVAL_MKI115V1 connected to STEVAL-MKI109V1



The STEVAL-MKI109V1 firmware (from version 2.0) automatically detects whether the Bluetooth extension is connected or not. If the module is connected, the firmware performs an initialization of the module and waits for the SPP connection (a pairing procedure is needed just the first time). This is shown in *Figure 9* where LEDs D4, D5, D6 are switched on (STEVAL-MKI109V1) and D1 is on (STEVAL-MKI115V1). Once the pairing and SPP connection are successful, LEDs D4, D5 and D6 on the STEVAL-MKI109V1 are switched off and LEDs D1 and D4 on the STEVAL-MKI115V1 are switched on (*Figure 10*).

Figure 9. STEVAL-MKI109V1 during pairing procedure

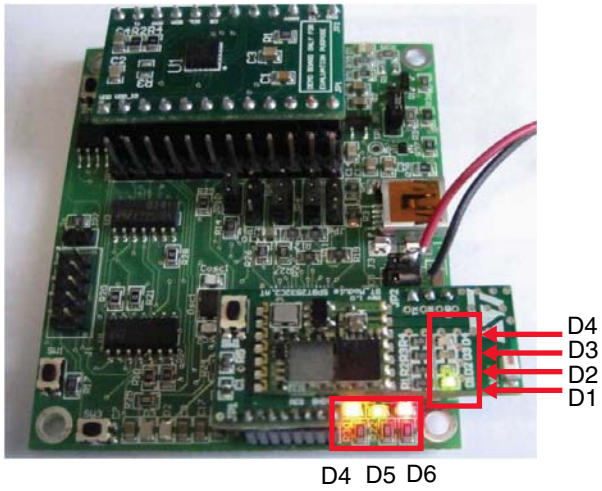


Figure 10. STEVAL-MKI109V1 after SPP connection

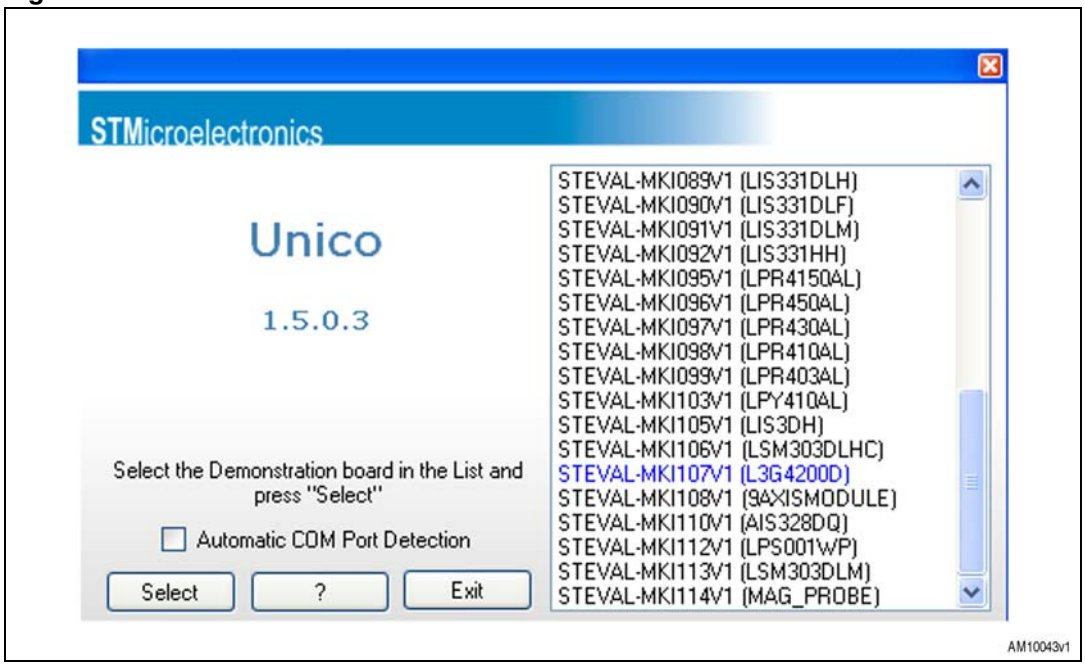
At this point the STEVAL-MKI109V1 is ready to communicate using the Bluetooth link in the same way as using the USB cable.

7.1 Unico integration

As previously described, the STEVAL-MKI109v1 together with the STEVAL-MKI115V1 (FW version 2.x) is fully compatible with “Unico” PC software. Its usage is the same as the USB version (see UM1049 for more details) with the exception of the virtual COM selection. For the USB version, the virtual COM associated with the STEVAL-MKI109V1 is automatically selected by the application.

For the Bluetooth version the virtual COM selection must be done manually. Once the “UNICO” launcher appears, the “Automatic COM Port Detection” flag must be unchecked (see *Figure 11*).

Figure 11. Unico launcher



Once the correct STEVAL board has been selected, “UNICO” is executed. The user selects the COM associated with the PC Bluetooth interface (see *Figure 12*), and then clicks on “Connect”.

Figure 12. UNICO GUI: COM port selection

After the COM selection and connection, the Bluetooth link is transparent and UNICO can be used normally (see UM1049 for more details regarding UNICO usage).

8 Revision history

Table 3. Document revision history

Date	Revision	Changes
15-Sep-2011	1	Initial release.