

WB2072E00A

WB2072-00 Bluetooth® Low Energy

Wireless MCU Module

Evaluation Kit

Quick Start Guide

Draft 0.1

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1. Introduction

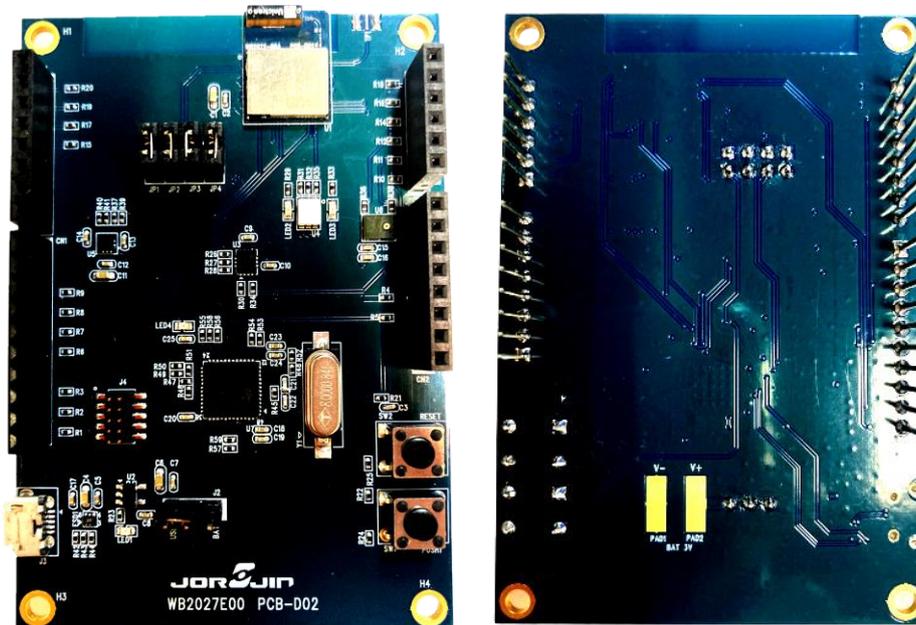
This document provides basic information on WB2072-00 Module development kits hardware and software setup operations. It also describes the key information about the associated software development package STSW-BNRGLP-DK and some common troubleshooting cases.

The WB2072-00 is a low power Bluetooth® Low Energy (LE) module, compliant with the Bluetooth® specification and supports master, slave and simultaneous master-and-slave roles. The device also supports the Bluetooth Low Energy data length extension feature, 2 Mbps, Long Range and extended advertising features.

The following WB2072-00 kits are available:

- **WB2072E00A development platform**

The WB2072E00A development platform embeds a CMSIS-DAP programming/debugging interface and features hardware resources for a wide range of application scenarios: sensor data (accelerometer, pressure and temperature sensor), human interface (buttons and LEDs), digital MEMS microphone and serial communication through USB virtual COM.



TOP side

Bottom side

Figure 1. WB2072E00A development board

2. Getting Started

The WB2072E00A evaluation board is preprogrammed with Bluetooth LE Sensor demonstration application for ST BLE Sensor app which allows to set and establish a connection with a smartphone (iOS or Android) running the ST BLE Sensor smartphone app (previously known as ST BlueMS).

Once connected, the WB2072-00 Module sends the data collected from the accelerometer sensor and environmental sensor (pressure and temperature) to the ST BLE Sensor smartphone app, which displays this information.

2.1 Powering up the evaluation board

LED1 green LED signals the board is being powered, either via:

- micro USB connector J3
- two AAA batteries on BAT region at the rear of the board

Power supply mode	J2 settings	Description
USB	USB position	USB supply through J3 connector
Battery	BAT position	The supply voltage must be provided through batteries (at the rear of the board)

When powered through USB, the evaluation board is also recognized on Windows Device Manager as CMSIS-DAP device.



Figure 2. Windows Device Manager - CMSIS-DAP

Note:

1. In Windows 10, no specific driver installation is required.
2. In Windows 7, the following driver must be installed before plugging the evaluation platform:
<https://os.mbed.com/docs/mbed-os/v6.0/program-setup/windows-serial-driver.html>
3. The composite device (WebUSB: CMSIS-DAP) installation is not required, as this functionality is not used.

In this context, once the evaluation platform has been recognized, it should also appear under Device and drivers as a ST IDB011VX mass storage device:



Figure 3. ST IDB011VX mass storage device

2.2 Firmware programming

Unzip BLE_SensorDemo_BlueMSapp_WB2072E00A.rar file



Figure 4. BLE Sensor Demo file

Method one

Step 1. Press and hold the [PUSH1] button.

Step 2. Copy and paste the "BLE_SensorDemo_BlueMSapp_WB2072E00A.bin" binary image into the [ST IDB011V1] mass storage device.

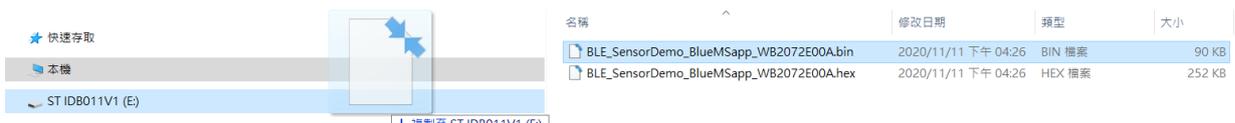


Figure 5. ST IDB011VX mass storage device

Method two

Step 1. Open BlueNRG-X Flasher Utility v4.0.0

Step 2. Select image file

Step 3. Select COM port

Step 4. Press “Flash”

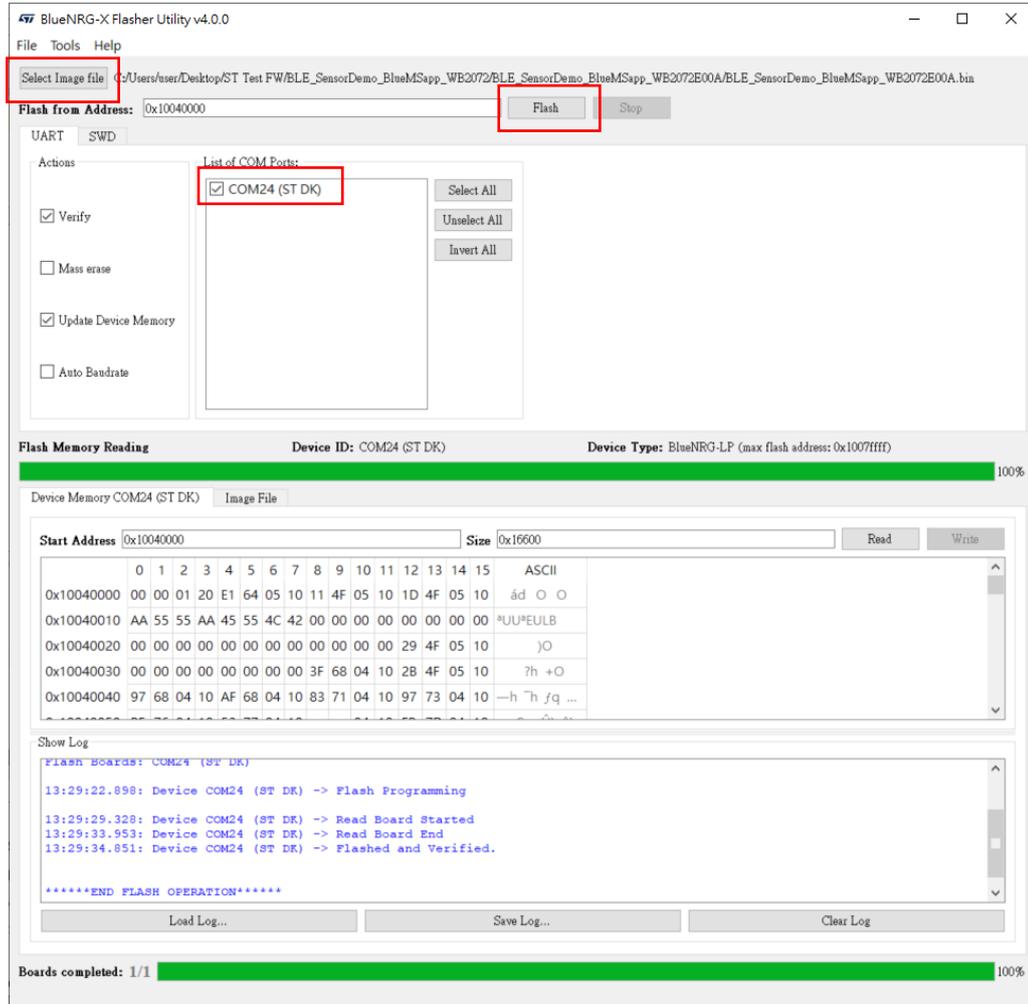
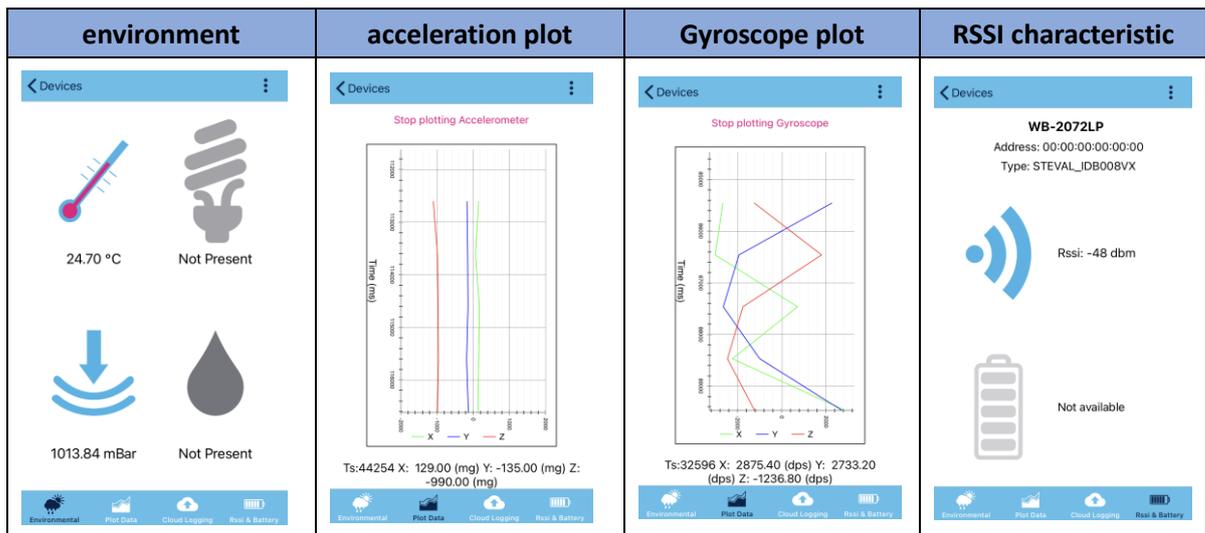
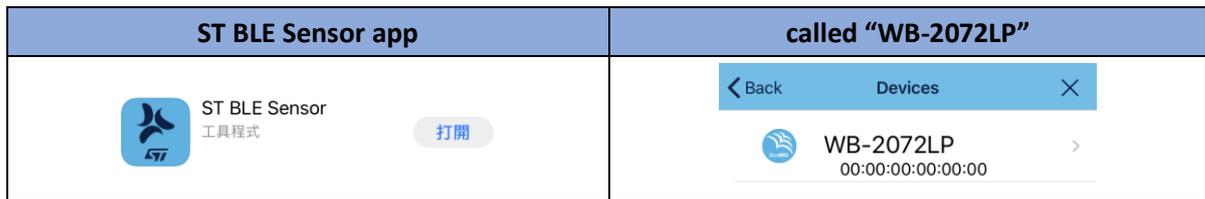


Figure 6. BlueNRG-X Flasher Utility v4.0.0

2.3 Install the ST BLE Sensor app for smartphones (central role)

Launch the ST BLE Sensor app on the smartphone

- It starts scanning for the Sensor Demo peripheral device. A device called “WB-2072LP” appears on the screen.
- Tap on the “WB-2072LP” name to connect to the selected WB2072E00A platform. The ST BLE Sensor app enables notifications on the acceleration characteristic and on the environment characteristics (pressure and temperature) and it displays the received environment characteristics values on the screen.



3. Troubleshooting

The following section reports some tips to be followed if the WB2072E00A platform is not recognized as a CMSIS-DAP device once connected to a PC USB port, or if user is not able to connect/debug to the selected platform through a CMIS-DAP programmer/debug tool:

1. The WB2072E00A platform starts always in "MAINTENANCE" mode.
 - a. The USB_CMSISDAP firmware is not loaded. Follows the instructions in the WB2072E00A user guide, section 2.9.4 "USB_CMSISDAP firmware update" in order to load the USB_CMSISDAP firmware. Please notice that this condition is not expected, since the USB_CMSISDAP firmware is programmed at WB2072E00A manufacturing time.
 - b. The application loaded in the WB2072-00 module makes the device continuously reset. Since the RTSN signal is used at the startup by the USB_CMSISDAP firmware for choosing to start in "MAINTENANCE" mode or not, it is necessary to disconnect the RSTN signal of the WB2072-00 module from the USB_CMSISDAP. In order to do it, user must perform the following steps:
 - 1.) Remove the jumper JP4.

- 2.) Unplug the USB cable (if plugged).
 - 3.) Plug the USB cable.
 - 4.) The mass storage device “ST IDB011VX” should be present among the devices in Windows “Devices and drives”.
 - 5.) Put back the jumper JP4 (fitted position).
 - 6.) Now user should able to use the USB_CMSISDAP firmware in order to fix the code in the WB2072-00 module.
2. It is not possible to connect to the WB2072E00A, WB2072-00 module with the on board CMSIS-DAP debugger/programmer.
- a. The WB2072-00 could be under reset, or the SWD pins have been configured in a different mode at the startup of the application, or the application sets the device in DEEPSTOP modes which powers off the debug port.
In such cases, it is possible to recover the WB2072-00 status as follow:
 1. Plug the USB cable in order to power up the board.
 2. Press and hold the PUSH1 button.
 3. Press the RESET button.
 4. This operation activates the internal UART bootloader: now it is possible to connect the CMSIS-DAP debugger/programmer to the WB2072-00 module.

NOTES:

Please refer to the STSW-BNRGLP-DK, C:{Installation_Path}\

ST\BlueNRG-LP DK

x.x.x\Docs\BlueNRG-LP_Debugging_Guidelines\BlueNRG-LP_Debugging_Guidelines.html

document for useful guidelines to be followed in these scenarios:

- CMSIS-DAP programming vs BlueNRG-LP running application in low power modes
- Debugging vs BlueNRG-LP running application in low power modes.

4. Acronyms and abbreviations

Table 1. List of acronyms

Acronym	Description
Bluetooth LE	Bluetooth Low Energy
DK	Development kit
SW	Software
USB	Universal serial bus

5. Referencess

Table 2. List of acronyms

What	Where	Description
ST BLE Sensor app for Android	https://www.st.com/en/embedded-software/stblesensor.html	ST BLE Sensor app web page
ST BLE Sensor app for iOS	https://www.st.com/en/embedded-software/stblesensor.html	ST BLE Sensor app web page
STSW-BNRGLP-DK	https://www.st.com/en/wireless-transceivers-mcus-and-modules/bluenrg-lp.html , Tools and Software, Evaluation Tool Software section	BlueNRG-LP DK SW package web page

6. Revision History

Revision	Date	Description
Draft 0.1	2020-11-13	Draft version.