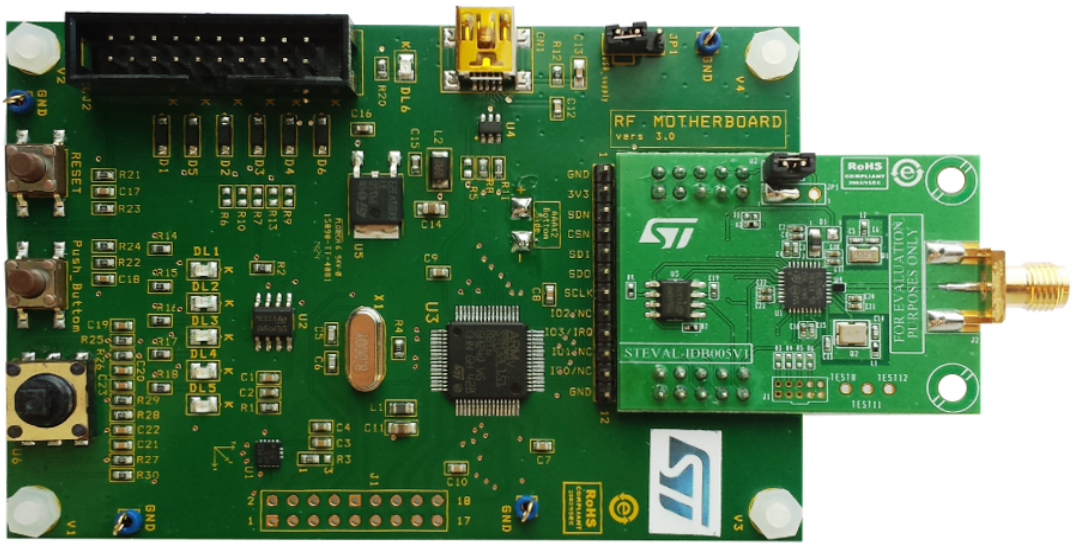
STEVAL-IDB005V1 evaluation board quick start guide

Introduction

The STEVAL-IDB005V1 is an evaluation board based on BlueNRG-MS, a low power Bluetooth® Smart IC compliant with the Bluetooth® specification, and supports both master and slave roles.

The STEVAL-IDB005V1 features an on-board STM32L151RBT6 low power microcontroller. It can be used to explore the BlueNRG-MS features and as a development platform for Bluetooth® Smart applications running on the STM32L151RBT6 microcontroller and interfacing with the BlueNRG-MS network coprocessor.

Figure 1. STEVAL-IDB005V1 Bluetooth® low energy evaluation board



1 List of acronyms

Table 1. **List of acronyms used in the document**

Term	Meaning
BLE	Bluetooth Low Energy
DK	Development kit
SW	Software
USB	Universal serial bus

2 Getting started

The STEVAL-IDB005V1 evaluation board is preprogrammed with sensor profile firmware (BlueNRG-MS_SensorDemo.hex) which allows to set and establish a connection with a smartphone (iOS 7 or Android 4.3) running a BlueNRG sensor application which works with the sensor profile firmware running on the STEVAL-IDB005V1 evaluation board.

The sensor profile firmware implements a proprietary Bluetooth profile which exposes two services: acceleration and environmental service.

The acceleration service contains the following characteristics:

- Acceleration: it gives the current value of the acceleration detected by the LIS3DH MEMS sensor on the STEVAL-IDB005V1 board.
- Free fall characteristic: it allows detection of free-fall condition by the LIS3DH MEMS sensor on the STEVAL-IDB005V1 board (the condition is detected if the acceleration on the 3 axes is near zero for a certain amount of time).

The environmental service contains characteristics that expose data from some environmental sensors, such as temperature sensors.

Note: Pressure and humidity characteristics are also defined to potentially support pressure and humidity environmental sensors. These sensors can been added through an expansion board connected to the STEVAL-IDB005V1 expansion connector J1 (Figure 1. STEVAL-IDB005V1 Bluetooth® low energy evaluation board STEVAL-IDB005V1 Bluetooth low energy evaluation board). The expansion board is not included with the STEVAL-IDB005V1.

For more information about the STEVAL-IDB005V1 components, refer to BlueNRG-MS development kits user manual (UM1870) available on STEVAL-IDB005V1 web page.

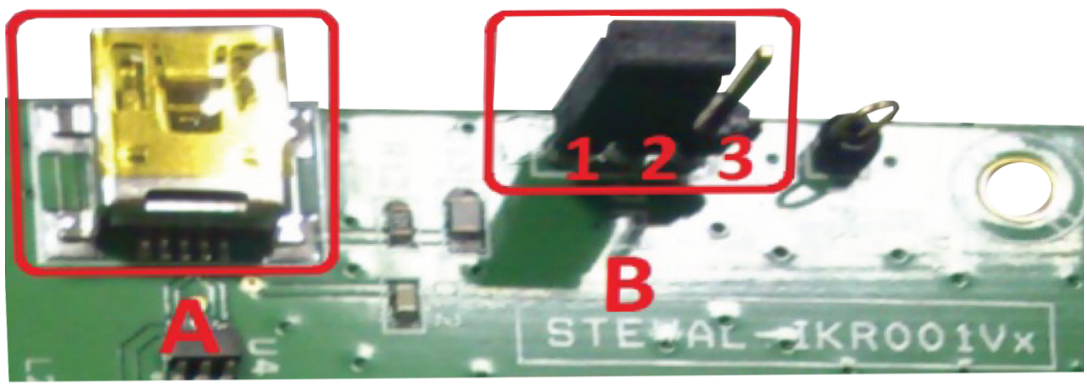
2.1 Powering up STEVAL-IDB005V1 evaluation board running the sensor profile firmware (peripheral role)

Two power options are available:

- **Batteries** - To power the STEVAL-IDB005V1 evaluation board using batteries, 2 AAA batteries must be inserted into the battery holder at the rear of the board, and jumper JP1 set to position 2-3 (Figure 2. STEVAL-IDB005V1 power options STEVAL-IDB005V1 power options (B)).
- **USB** - To power the STEVAL-IDB005V1 evaluation board through USB, jumper JP1 must be in position 1-2 (Figure 2. STEVAL-IDB005V1 power options STEVAL-IDB005V1 power options (B)). Connect a USB cable to the mini-USB connector (Figure 2. STEVAL-IDB005V1 power options STEVAL-IDB005V1 power options (A)) and to a PC USB port.

Once powered, the STEVAL-IDB005V1 sensor profile firmware will start advertising, waiting for a smartphone to connect to it.

Figure 2. STEVAL-IDB005V1 power options



2.2 Install the BlueNRG app for smartphones (central role)

Two versions (Android 4.3 and iOS 7) of the smartphone sensor application are available for download on the specific web pages (Table 2. Reference information, Android 4.3 & iOS SensorApp).

Install the smartphone SensorApp application on the selected smartphone.

2.3 Run BlueNRG app for smartphones

- Launch the BlueNRG SensorApp application on the smartphone
- It will start scanning for the BlueNRG sensor peripheral. A device called “BlueNRG” will appear on the screen (this is the STEVAL-IDB005V1 running the sensor profile firmware)
- Tap on the BlueNRG name to connect to the STEVAL-IDB005V1 running the sensor profile firmware. The BlueNRG SensorApp application will enable notifications on the acceleration characteristic and displays the received value on the screen.

Figure 3. Smartphone BlueNRG SensorApp acceleration notification



- Data from environmental sensors are also periodically read and displayed.

Figure 4. **Smartphone BlueNRG SensorApp environment sensors**

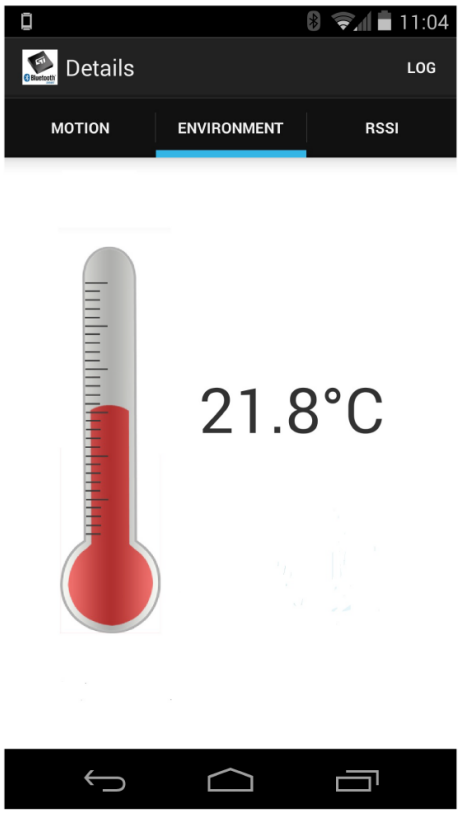


Figure 5. **Smartphone BlueNRG SensorApp RSSI notifications**



3 SW demonstration applications

- To develop a software application for the STEVAL-IDB005V1 evaluation board, it is recommended to start with the reference demonstration applications provided within the BlueNRG DK software package available on the STEVAL-IDB005V1 web page. The BlueNRG DK software package supports both BlueNRG and BlueNRG-MS devices.
- Unzip the file, launch the related installer and follow installation steps (the default installation path is C:\ \Program Files (x86)\\STMicroelectronics\\BlueNRG DK x.x.x)
- Wait for the package installation to complete.
- The Projects folder in BlueNRG DK SW package contains the available BlueNRG-MS demonstration applications, IAR projects, sources and header files.
- IAR Embedded Workbench for ARM (EWARM) tool V7.40.3 or later is needed for building and downloading software applications running on the STM32L151RBT6 microcontroller.

Note: For a description of the available BlueNRG-MS demonstration applications and supported platforms, refer to BlueNRG-MS development kits user manual (UM1870).

The BlueNRG-MS_SensorDemo.hex prebuilt binary image is also provided within the BlueNRG DK software package, in the Firmware folder.

4 References

Table 2. **Reference information**

What	Where	Description
BlueNRG-MS Bluetooth low energy wireless network processor	www.st.com/bluenrg-ms	BlueNRG-MS device web page
Bluetooth low energy Specification	https://www.bluetooth.org/en-us/specification/adopted-specifications	Bluetooth Low Energy specification web page
Smartphone Android 4.3 Sensor App	https://play.google.com/store/apps/details?id=com.st.bluenrg	Android 4.3 BlueNRG SensorApp web page
Smartphone iOS SensorApp	https://itunes.apple.com/us/app/bluenrg/id705873549?l=it&ls=1&mt=8	iOS BlueNRG SensorApp web page
STSW-BLUENRG-DK	STEVAL-IDB00V51 web page, Tools and Software section	BlueNRG DK SW package with reference demonstration applications
STEVAL-IDB005V1	www.st.com/bluenrg-ms, Evaluation Tools section	STEVAL-IDB005V1 platform web page
UM1870 user manual	STEVAL-IDB005V1 platform web page, User Manual section	BlueNRG-MS development kits user manual describing the reference demonstration applications

Revision history

Table 3. **Document revision history**

Date	Revision	Changes
25-May-2015	1	Initial release.
04-Apr-2016	2	Removed: Figure 6 BlueNRG-MS DK SW package structure & content
29-Oct-2018	3	Updated Introduction. Minor text changes.

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