
Getting started with STEVAL-IDB007Vx, STEVAL-IDB008Vx and STEVAL-IDB009Vx evaluation boards

Introduction

The STEVAL-IDB007Vx (STEVAL-IDB007V1/STEVAL-IDB007V2) is an evaluation board based on [BlueNRG-1](#) (QFN32 package).

The STEVAL-IDB008Vx (STEVAL-IDB008V1/STEVAL-IDB008V2) is an evaluation board based on [BlueNRG-2](#) (QFN32 package).

The STEVAL-IDB009Vx (STEVAL-IDB009V1) is an evaluation board based on [BlueNRG-2](#) (QFN48 package).

[BlueNRG-1](#) (QFN32 package) and [BlueNRG-2](#) (QFN32 and QFN48 packages) are low power Bluetooth® smart systems-on-chip compliant with the Bluetooth® specification and support master, slave and simultaneous master-and-slave roles.

The document content is valid for the STEVAL-IDB007Vx, STEVAL-IDB008Vx and STEVAL-IDB009Vx platforms. Any specific difference is highlighted whenever it is needed.

1 Development platforms

Figure 1. STEVAL-IDB007V1 development platform

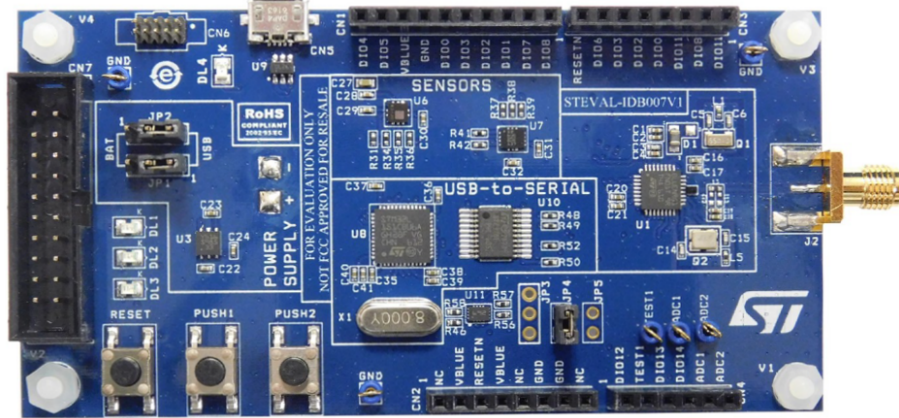


Figure 2. STEVAL-IDB007V2 development platform

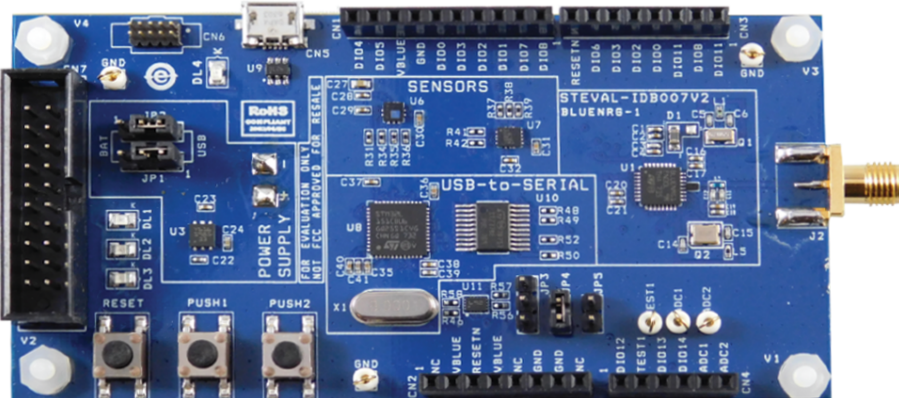


Figure 3. STEVAL-IDB008V1 development platform

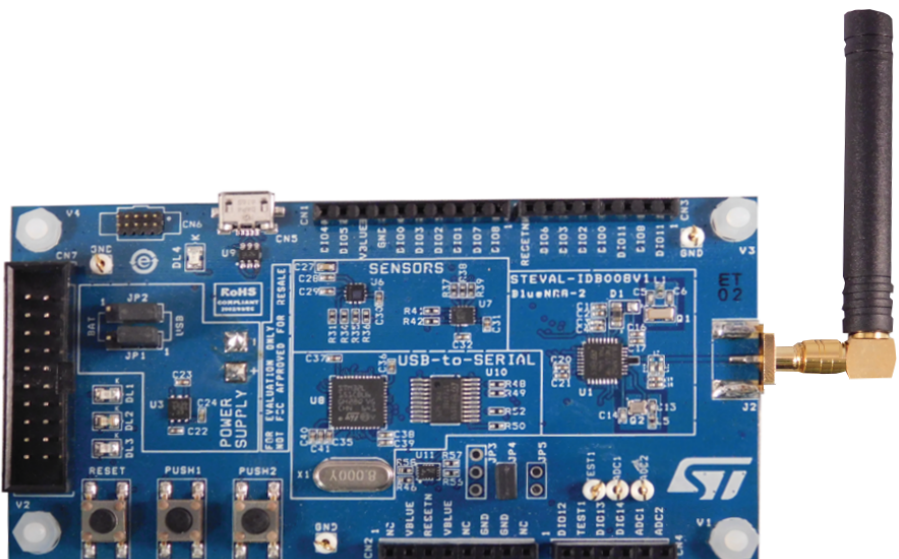
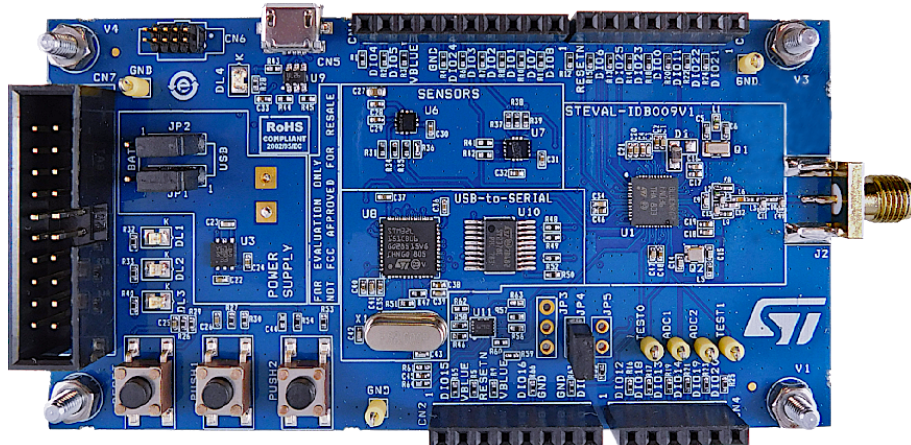


Figure 4. STEVAL-IDB008V2 development platform



Figure 5. STEVAL-IDB009V1 development platform



2 Acronyms and abbreviations

Table 1. List of acronyms

| Acronym | Description |
|---------|----------------------|
| BLE | Bluetooth low energy |
| DK | Development kit |
| SW | Software |
| USB | Universal serial bus |

3 Getting started

The evaluation board is preprogrammed with sensor profile firmware (BLE_SensorDemo.hex) which allows to set and establish a connection with a smartphone (iOS or Android) running a BlueNRG sensor application which works with the sensor profile firmware running on the STEVAL-IDB007Vx, STEVAL-IDB008Vx or STEVAL-IDB009Vx 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 MEMS sensor on the evaluation board.
- **Free fall characteristic:** it allows detection of free-fall condition by the [LSM6DS3](#) MEMS sensor on the evaluation 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.

3.1 Powering up the evaluation board running the sensor profile firmware (peripheral role)

Two power options are available:

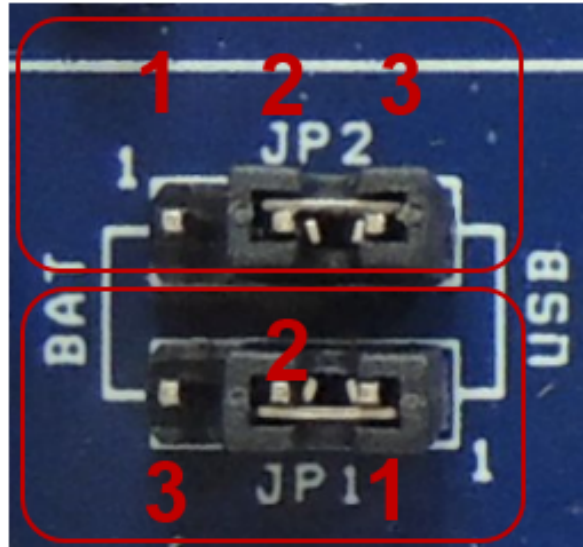
- **Batteries** - To power the selected evaluation board using batteries, 2 AAA batteries must be inserted into the battery holder at the rear of the board, and jumper JP1 set to position 2-3 and jumper JP2 set to position 1-2 ([Figure 6. Board power options](#)).

Note: In battery operating mode, if R59, R60 and R62 resistors are mounted, you should remove them to make [LSM6DS3](#) function correctly.

- **USB** - To power the selected evaluation board through USB, jumper JP1 must be in position 1-2 and jumper JP2 set to position 2-3 ([Figure 6. Board power options](#)). Connect a USB cable to the micro-USB connector ([Figure 6. Board power options](#)) and to a PC USB port.

Once powered, the evaluation board sensor profile firmware starts advertising, waiting for a smartphone to connect to it.

Figure 6. Board power options



3.2 Install the BlueNRG app for smartphones (central role)

- Two versions (Android and iOS) of the smartphone sensor application are available for download on the specific web pages ([Table 2. Reference information Android & iOS SensorApp](#)).
- Install the smartphone SensorApp application on the selected smartphone.

3.3 Run BlueNRG app for smartphones

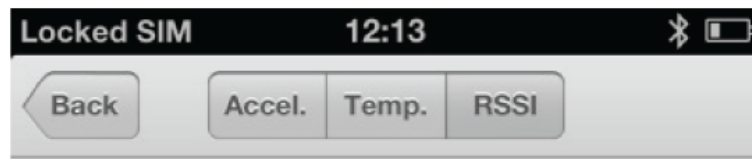
- Launch the BlueNRG SensorApp application on the smartphone
- It starts scanning for the BlueNRG sensor peripheral. A device called "BlueNRG" appears on the screen (this is the STEVAL-IDB007Vx, STEVAL-IDB008Vx or STEVAL-IDB009Vx running the sensor profile firmware)
- Tap on the BlueNRG name to connect to the selected platform running the sensor profile firmware. The BlueNRG SensorApp application enables notifications on the acceleration characteristic and displays the received value on the screen.

Figure 7. Smartphone BlueNRG SensorApp acceleration notification



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

Figure 8. Smartphone BlueNRG SensorApp RSSI notifications



-61 dBm



4 Software demonstration applications

- In order to develop a software application for the STEVAL-IDB007Vx, STEVAL-IDB008Vx or STEVAL-IDB009Vx evaluation board, it is recommended to start with the reference demonstration applications provided within the BlueNRG-1_2 DK SW package for [BlueNRG-1](#), [BlueNRG-2](#) BLE stack v2.x family (STSW-BLUENRG1-DK) available on the STEVAL-IDB007Vx, STEVAL-IDB008Vx, STEVAL-IDB009Vx web pages.
- Unzip the file, launch the related installer and follow installation steps.
- Wait for the package installation to complete.
- The Projects folder in DK SW package contains the available demonstration applications, IAR projects, sources and header files.
- IAR Embedded Workbench for ARM (EWARM) tool is needed for building and downloading software applications running on the BlueNRG-1, BlueNRG-2 microcontrollers.

Note: For a description of the available BlueNRG-1, BlueNRG-2 demonstration applications and supported platforms, refer to BlueNRG-1, BlueNRG-2 development kits user manual available on the related web page. The BLE_SensorDemo.hex prebuilt binary images for BlueNRG-1, BlueNRG-2 platforms are also provided within the DK software package, in the Firmware folder. Keil MDK-ARM and Atollic TrueStudio for ARM (GCC) toolchains projects are also available.

5 References

Table 2. Reference information

| What | Where | Description |
|--|---|---|
| BlueNRG-1 Bluetooth Low Energy wireless System on Chip | BlueNRG-1 | BlueNRG-1 device web page |
| BlueNRG-2 Bluetooth Low Energy wireless System on Chip | BlueNRG-2 | BlueNRG-2 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.blunrg | Android 4.3 BlueNRG Sensor App web page |
| Smartphone iOS Sensor App | https://itunes.apple.com/us/app/bluenrg/id705873549?l=it&ls=1&mt=8 | iOS BlueNRG Sensor App web page |
| STSW-BLUENRG1-DK | STEVAL-IDB007V1 , STEVAL-IDB007V2 , STEVAL-IDB008V1 , STEVAL-IDB008V2 and STEVAL-IDB009V1 web pages, Tools and Software section | BlueNRG-1_2 DK SW package for BlueNRG_1, BlueNRG-2 BLE stack v2.x family, with reference demonstration applications |
| STEVAL-IDB007V1 | BlueNRG-1 , Evaluation Tools section | STEVAL-IDB007V1 platform web page |
| STEVAL-IDB007V2 | BlueNRG-1 , Evaluation Tools section | STEVAL-IDB007V2 platform web page |
| STEVAL-IDB008V1 | BlueNRG-2 , Evaluation Tools section | STEVAL-IDB008V1 platform web page |
| STEVAL-IDB008V2 | BlueNRG-2 , Evaluation Tools section | STEVAL-IDB008V2 platform web page |
| STEVAL-IDB009V1 | BlueNRG-2 , Evaluation Tools section | STEVAL-IDB009V1 platform web page |
| UM2071 | STEVAL-IDB007V1 , STEVAL-IDB007V2 , STEVAL-IDB008V1 , STEVAL-IDB008V2 and STEVAL-IDB009V1 web pages | BlueNRG-1, BlueNRG-2 Development Kits User Manual |

Revision history

Table 3. Document revision history

| Date | Revision | Changes |
|-------------|----------|--|
| 14-Jul-2016 | 1 | Initial release. |
| 19-Dec-2016 | 2 | Updated STEVAL-IDB007V1 Bluetooth® low energy evaluation board on the cover page. |
| 23-Oct-2017 | 3 | Added: reference to STEVAL-IDB008V1 BlueNRG-2 evaluation platform, reference to BlueNRG-1_2 DK SW package for BLE stack v2.x family and reference to BlueNRG-1_V1 DK SW package for BLE stack v1.x family. |
| 02-May-2018 | 4 | Updated Introduction. Added references to STEVAL-ID007V2 and STEVAL-IDB008V2 evaluation platforms. |
| 27-Nov-2018 | 5 | Updated title and Introduction. Added Section 1 Development platforms and references to the STEVAL-IDB009V1 evaluation platform (BlueNRG-2 QFN48 package). |
| 20-Mar-2019 | 6 | Updated Section 3.1 Powering up the evaluation board running the sensor profile firmware (peripheral role) . Removed references to BlueNRG-1_V1 DK SW package. |

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