

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

Introduction

The STEVAL-IDB007Vx (STEVAL-IDB007V1/STEVAL-IDB007V2) is an evaluation board based on BlueNRG-1, a low power Bluetooth® Smart System on Chip that is compliant with the Bluetooth® specification and supports master, slave and simultaneous master-and-slave roles.

The STEVAL-IDB008Vx (STEVAL-IDB008V1/STEVAL-IDB008V2) is an evaluation board based on BlueNRG-2, a low power Bluetooth® Smart system-on-chip that is compliant with the Bluetooth® specification and supports master, slave and simultaneous master-and-slave roles.

Figure 1. STEVAL-IDB007V1 development platform

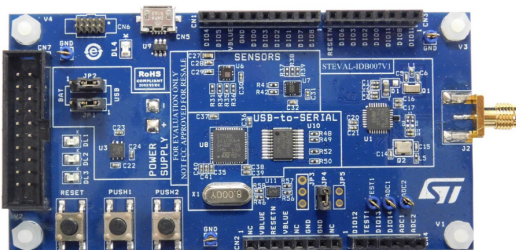


Figure 2. STEVAL-IDB007V2 development platform

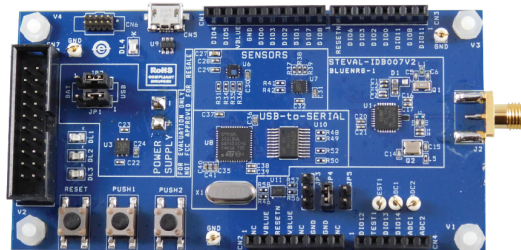


Figure 3. STEVAL-IDB008V1 development platform

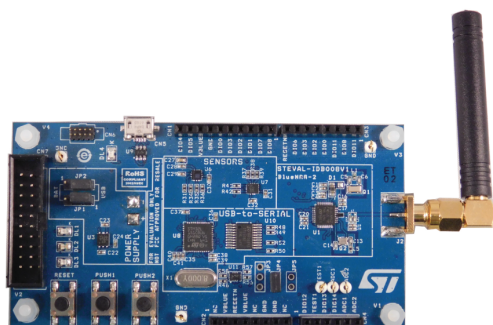
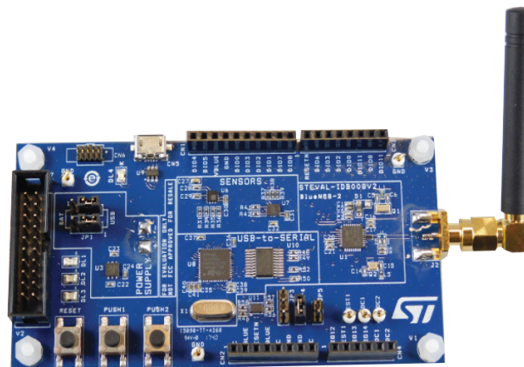


Figure 4. STEVAL-IDB008V2 development platform



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

1 Acronyms and abbreviations

Table 1. List of acronyms

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

2 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 or STEVAL-IDB008Vx 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.

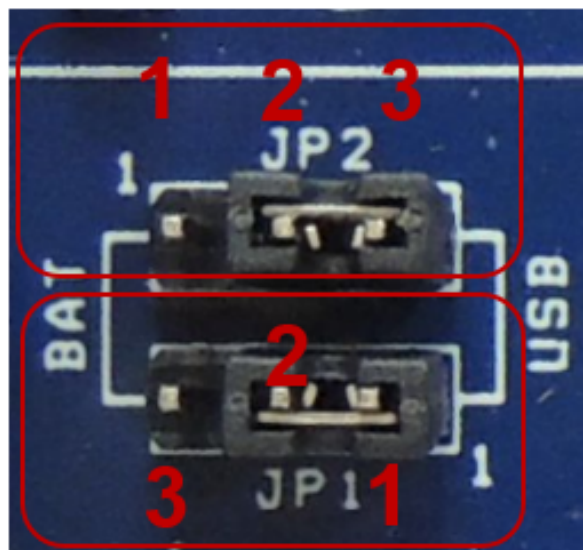
2.1 Powering up the STEVAL-IDB007Vx/STEVAL-IDB008Vx evaluation board running the sensor profile firmware (peripheral role)

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 5. Board power options](#)).
- **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 5. Board power options](#)). Connect a USB cable to the micro-USB connector ([Figure 5. 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 5. Board power options



2.2 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.

2.3 Run BlueNRG app for smartphones

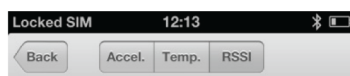
- Launch the BlueNRG SensorApp application on the smartphone
- It starts scanning for the BlueNRG sensor peripheral. A device called "BlueNRG" appears on the screen (this is the STEVAL-IDB007Vx or STEVAL-IDB008Vx running the sensor profile firmware)
- Tap on the BlueNRG name to connect to the selected 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 6. Smartphone BlueNRG SensorApp acceleration notification



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

Figure 7. Smartphone BlueNRG SensorApp RSSI notifications



-61 dBm



GSPG0306141155SG

3 Software demonstration applications

- In order to develop a software application for the STEVAL-IDB007Vx or STEVAL-IDB008Vx 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 web pages, or the BlueNRG-1_V1 DK SW package for BlueNRG-1 BLE stack v1.x family ([STSW-BNRG_V1-DK](#)), available on the STEVAL-IDB007Vx web page.
- 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.

4 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 and STEVAL-IDB008V2 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
STSW-BNRG_V1-DK	STEVAL-IDB007V1 web page, Tools and Software section	BlueNRG-1_V1 DK SW package for BlueNRG-1 BLE stack v1.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
UM2071	STEVAL-IDB007V1 , STEVAL-IDB007V2 , STEVAL-IDB008V1 and STEVAL-IDB008V2 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 <i>STEVAL-IDB007V1 Bluetooth® low energy evaluation board</i> 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.

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