
Quick guide on BLE RF technology: products, evaluation kits and software packages

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Main components	
BlueNRG-MS	Bluetooth Low Energy Network Processor supporting Bluetooth 4.1 core specification
BlueNRG	Bluetooth® low energy wireless network processor
SPBTLE-RF	Very low power module for Bluetooth Smart v4.1

Purpose and benefits

The BlueNRG-MS and BlueNRG are very low power Bluetooth low energy (BLE) single-mode network processors, compliant with Bluetooth specification v4.1 and v4.0 respectively. The entire Bluetooth low energy stack runs on the embedded Cortex M0 core. The non-volatile Flash memory allows on-field stack upgrading. Both the devices offer the option of interfacing with external microcontrollers using the SPI transport layer.

The purpose of the design tip is to provide a quick summary to highlight what is needed for the evaluation of ST BLE RF technology.

The following sections will describe the available products, based on the BlueNRG transceiver, along with the related evaluation kits and software packages that enable customers to rapidly implement a design.

Description

CHIPSET SOLUTION:

- 1) Product: BlueNRG/BlueNRG-MS
 - a. Very low power BLE single-mode network processor, compliant with Bluetooth specification v4.0/v4.1
- 2) FW packages (with SMT32L151):
 - a. STSW-BLUENRG-DK: SW package supporting BlueNRG and BlueNRG-MS low energy network processors
 - i. STM32L151 ACI (application command interface) framework

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- ii. BlueNRG GUI (graphical user interface), allowing to interact and evaluate the capabilities of the BlueNRG and BlueNRG-MS network processors
 - b. X-CUBE-BLE1 software expansion for STM32Cube
 - i. The software runs on the STM32 and includes drivers for the BlueNRG device. The expansion is built on the STM32Cube software. The software comes with examples running on the X-NUCLEO-IDB04A1 or X-NUCLEO-IDB05A1, when connected to a NUCLEO-L053R8, NUCLEO-F401RE or NUCLEO-L476RG
 - c. OSXSmartConnPS: BLE profiles for the X-CUBE-BLE1 expansion
 - d. STSW-BNRG001: power consumption evaluation tool

3) Evaluation kits:

- a. STEVAL- IDB002V1: BlueNRG mother board + daughter card
- b. STEVAL- IDB003V1: BlueNRG USB dongle
- c. STEVAL- IDB005V1: BlueNRG-MS mother board + daughter card
- d. X-NUCLEO-IDB04A1 based on the BlueNRG
 - i. Need a companion Nucleo motherboard
 - ii. Supported part numbers are NUCLEO-L053R8, NUCLEO-F401RE, or NUCLEO-L476RG
- e. X-NUCLEO-IDB05A1 based on the SPBTLE-RF module
 - i. Need a companion Nucleo motherboard
 - ii. Supported part numbers are NUCLEO-L053R8, NUCLEO-F401RE, or NUCLEO-L476RG

MODULE SOLUTION

1) Product: SPBTLE-RF module

- a. Easy to use Bluetooth Smart master/slave network processor module, compliant with Bluetooth v4.1. It supports multiple roles simultaneously, and can act at the same time as Bluetooth Smart sensor and hub device.

2) FW package:

- a. X-CUBE-BLE1 Bluetooth Low Energy software expansion for STM32Cube

3) Evaluation kits:

- a. X-NUCLEO-IDB05A1 based on the SPBTLE-RF module
 - i. Need a companion Nucleo motherboard
 - ii. Supported part numbers are NUCLEO-L053R8, NUCLEO-F401RE, or NUCLEO-L476RG

Support material

Documentation
Datasheets: BlueNRG-MS BlueNRG SPBTLE-RF
User/Programming manuals: PM0237: BlueNRG, BlueNRG-MS stacks programming guidelines UM1755: BlueNRG Bluetooth® LE stack application command interface (ACI) UM1770: BlueNRG profile application interface UM1868: BlueNRG and BlueNRG-MS information register (IFR)
Application Notes: AN4494: Bringing up the BlueNRG and BlueNRG-MS devices AN4491: BlueNRG updater AN4486: BlueNRG, BlueNRG-MS over-the-air bootloader AN4630: PCB design guidelines for the BlueNRG and BlueNRG-MS devices

Revision history

Date	Version	Changes
04-Dec-2015	1	Initial release

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