BlueNRG-2

The new generation Bluetooth® low energy System-on-Chip

BlueNRG-2 boosts the performance of Smart Things

Certified Bluetooth 5.0, ST's new generation of Bluetooth® low energy application processor ensures interoperability with the latest generation of smartphones and offers ultra-low current consumption with robust RF performance, increasing the battery lifetime of applications.

In addition to a large integrated memory and a scalable number of GPIOs, the latest evolution of the Bluetooth low energy stack adds state-of-the-art communication, security and privacy along with an extended packet length for a faster data transfer.

KEY FEATURES
New enhanced features

- Bluetooth 5.0 certification
- Up to 256 Kbytes of embedded Flash memory
- State-of-the-art security and privacy features
- Faster data transfer rate with packet length extension

KEY BENEFITS
Extended battery life and secure connection

- Optimized memory architecture: 256 Kbytes of Flash memory, 24 Kbytes of ultra-low-leakage RAM (with full data retention)
- Single-core, ultra-low-power 32-bit ARM® Cortex®-M0 core architecture up to 32 MHz

- Enhanced power saving with sub-µA sleep mode
- Operating temperature up to +105 °C
- Up to +8 dBm maximum output power
- Up to 26 GPIOs (in QFN48 package)
- Triple package offering:
  - QFN32 (5 x 5 x 1 mm)
  - WLCSP32 (2.66 x 2.56 x 0.5 mm)
  - QFN48 (6 x 6 x 1 mm)

KEY APPLICATIONS

- Smart Things
- Smart Home
- Industrial
- Gaming and Toys
- Healthcare and Fitness
- Finder/Tags and Tracking

BLUENRG-2 DESCRIPTION
Bluetooth® low energy System-on-Chip

The BlueNRG-2 is a very low power Bluetooth low energy single-mode SoC, compliant with Bluetooth 5.0 specifications. The BlueNRG-2 embeds an ultra-low-power 32-bit ARM Cortex® M0 core running up to 32 MHz to host Bluetooth low energy stack and user application code. The on-chip 256-Kbytes Flash memory simplifies system design by saving external memory components and offering full upgradability of both Bluetooth low energy stack and application code. The BlueNRG-2 comes with 24 Kbytes of ultra-low-leakage RAM with full-data retention and offers SPI, UART, and I²C peripherals, multifunction timers, watchdog, RTC, and DMA controller. It also features a low-power 10-bit ADC for interfacing with analog sensors as well as monitoring the integrated battery level. A digital filter and the PDM input interface support seamless voice capturing from a digital MEMS microphone. The BlueNRG-2 offers excellent RF performance, robustness and connection reliability. The integrated high-efficiency DC/DC converter enables ultra-low power figures with an enhanced sleep mode, extending battery lifetime. Different packages with a scalable number of GPIOs (up to 26) are available, including a WLCSP package for size-constrained applications.

The BlueNRG-2 comes with a full-featured eco-system of tools, evaluation board and SDKs. The Navigator GUI enables to quickly run proposed examples and start developing new projects out-of-the-box.

AVAILABLE TOOLS AND TECHNICAL DOCUMENTATION

Evaluation kit	STEVAL-IDB008V1	BlueNRG-2 evaluation kit
HW resources	Schematic pack	Evaluation kit: schematic
	BOM	Evaluation kit: bill of material
	Gerber pack	Evaluation kit: board manufacturing specification
SW resources	GUI	Graphical user interface for driving by PC evaluation kit
	Navigator	PC application providing interface to demonstration and peripheral driver example
	Flasher	PC application allowing BlueNRG-2 programming
	OTA demo	Demonstration software for enabling the over the air firmware update
	Sensor demo	Demonstration software showing communication between BlueNRG-2 and smartphone
	Beacon demo	Demonstration software showing BlueNRG-2 beacon functionality
	HID peripheral demo	Demonstration software showing BlueNRG-2 HID (mouse and keyboard) functionality
	Remote control demo	Demonstration software showing how BlueNRG-2 can control a remote device
	Chat demo	Demonstration software showing how to implement two way communication between two BlueNRG-2 device
	Security example	Demonstration software showing how to implement a BLE security scenario
	DTM	Software for enabling direct test mode
	BlueNRG-1 Radio Init Wizard	PC application allowing BlueNRG initialization parameter setup
Documentation	AN4872	BlueNRG-1 and BlueNRG-2 UART bootloader protocol
	AN4820	BlueNRG-1 and BlueNRG-2 low power modes
	AN4869	BlueNRG-1 and BlueNRG-2 BLE over the air firmware upgrade
	AN4818	Bringing up the BlueNRG-1 and BlueNRG-2 device
	AN4804	How to get your Bluetooth design FCC and BT certified
	AN4392	Using the BlueNRG family transceivers under ARIB STD-T66 in the 2400 – 2483.5 MHz band
	AN4387	Using the BlueNRG family transceivers under ETSI EN 300 328 in 2400 –2483.5 MHz band
	AN4378	Using the BlueNRG family transceivers under FCC title 47 part 15 in the 2400 – 2483.5 MHz band
	PM0257	BlueNRG-1, BlueNRG-2 BLE stack programming guidelines
	UM2058	BlueNRG GUI SW package
	UM2109	BlueNRG-1 ST-LINK Utility software description

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