nRF51822 Evaluation Kit

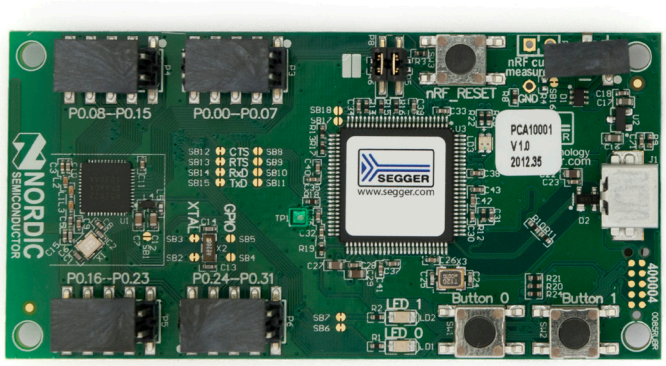
The nRF51822 Evaluation kit is a stand-alone platform for evaluation and initial prototyping of Bluetooth® low energy and 2.4GHz proprietary designs with the nRF51822 SoC. The kit gives access to all GPIO pins via pin headers and incorporates a coin-cell battery holder for portability enabling in-situ evaluation and test. Each board has 2 buttons, 2 LEDs, DC/DC converter circuit (optionally enabled in software), power supply and current measurement pins and a Segger J-Link device which enables program, debug and UART communication with the nRF51822 device over USB. A range of software examples from the nRF518 SDK can be used with the evaluation kit.

Software development

The nRF51822-EK is supported by protocol stacks and example software from Nordic Semiconductor. Bluetooth smart protocol stacks are available free-of-charge and license free from Nordic Semiconductor. Nordic's Bluetooth smart protocol stacks are known as 'SoftDevices'. SoftDevices are self-contained protocol stacks and associated frameworks that operate in their own portion of memory and are independent of application code in memory. The nRF51 SDK contains a wide range of software modules, complete examples and utilities and is a great starting point for beginning your application development and using pre-built code examples. softDevices and the nRF51 SDK are available to download using a product key at www.nordicsemi.no

The nRF51822 EK is supported by a number of Toolchains. Nordic offers support for the following

- Keil MDK
- IAR Workbench



FEATURES

- nRF51822 2.4GHz multiprotocol SoC
- ARM Cortex-M0 CPU
- 2.4GHz Multiprotocol Radio for Bluetooth smart & 2.4GHz proprietary
- Flash memory
- 31 GPIO
- 2 user-programmable LEDs
- 2 user-programmable buttons
- Integrated PCB antenna
- Segger J-Link program/debug on board
- Current measurement pins
- USB connector
- Coincell battery holder

KIT CONTENTS

- 1 x nRF51822 EK board
- 1 x nRF51822 USB dongle
- 1 x Mini USB cable
- 5 x nRF51822 samples

APPLICATIONS

The nRF51822 EK supports evaluation/development with the nRF51822 multiprotocol SoC. The nRF51822 is suitable for:

- Wearables
- Appcessories
- Beacons
- Rezence wireless charging monitoring
- Sports & Fitness
- Medical & Wellness
- Smarthome sensors
- PC peripherals
- Smart remote controls
- Toys & electronic games
- Smart domestic appliances
- Proximity/Alert sensors
- Smart RF tags
- Industrial/commercial sensors

Easy, fast and safe code development

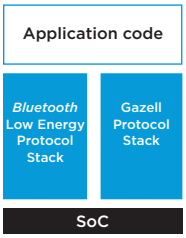
The nRF51822 offers developers a clean separation between application code development and embedded protocol stacks. This means compile, link and run-time dependencies with the embedded stack and associated de-bugging challenges are removed. The Bluetooth low energy stack is a pre-compiled binary available from Nordic Semiconductor, leaving application code to be compiled stand-alone. The embedded stack interface uses an asynchronous and event-driven model removing the need for RTOS frameworks.

OTA DFU

The nRF51822 is supported by a Over The Air Device Firmware Upgrade (OTA-DFU) feature. This allows for in the field updates of application software and SoftDevice with the S110 SoftDevice.

Maximum re-use and easy migration

The devices in the nRF51 series are pin compatible enabling migration between technologies such as Bluetooth low energy and ANT with no layout changes. The common HW architecture ensures that one codebase can be re-used effortlessly between nRF51 series devices. Variants in the nRF51 series enable simple choices tailoring device selection to desired wireless protocol and feature requirements with little or no changes.



S-series protocol stacks

The S-series protocol stacks complement the nRF51 series SoCs. All nRF51 series are programmable with software stacks available from Nordic Semiconductor. This brings maximum flexibility to application development and allows the latest stack version to be programmed into the nRF51 series SoC.

nRF51822 compatible protocol stacks

S110	*Bluetooth* low energy peripheral stack
S210	*Bluetooth* low energy 8-link central stack

Development tools

Nordic Semiconductor provides a complete range of hardware and software development tools for the nRF51 series devices.

RELATED PRODUCTS

nRF6700	nRFgo Starter Kit
nRF51822-DK	nRF51822 Development Kit
nRF51822-EK	nRF51822 Evaluation Kit
nRF51422	ANT multi-protocol SoC

SPECIFICATIONS

Frequency band	2.4GHz ISM (2.40000 – 2.4835GHz)
On-air data rate	250 kbps, 1 Mbps or 2 Mbps
Modulation	GFSK
Output power	Programmable: +4 to -20dBm in 4dB steps
Sensitivity	-93dBm *Bluetooth* low energy -96dBm at 250kb -90dBm at 1Mbs -85dBm at 2Mbs
Radio current consumption LDO at 1.8V	16mA – TX at +4dBM output power 10.5mA – TX at 0dBm output power 13mA – RX at 1Mbs
Radio current consumption DC-DC at 3V	10.5mA – TX at +4dBm output power 8.1mA – TX at 0dBm output power 9.5mA – RX at 1Mbs
Microcontroller	32-bit ARM Cortex M0
Program Memory	256/128kB Flash
RAM	16kB
Oscillators	16MHz crystal oscillator 16MHz RC oscillator 32kHz crystal oscillator 32kHz RC oscillator (±250 ppm)
System current consumption	420nA – No RAM retention 530nA - 8k RAM retention 2µA – All peripherals in IDLE mode
Hardware Security	128-bit AES ECB/CCM/AAR co-processor
GPIO	31 configurable
Digital I/O	X2 Hardware SPI master 2X 2-wire master UART Quadrature demodulator
Peripherals	10-bit ADC RNG Temperature sensor RTC
PPI	16-channel
Voltage regulator	LDO (1.8 to 3.6V), LDO bypass (1.75 to 1.95V) Buck DC/DC (2.1 to 3.6V)
Timers/counters	2 x 16 bit, 1 x 24bit, 2 x 24bit, RTC
Package options	RoHS compliant 48-pin 6x6 QFN / 62-ball 3.5 x 3.8 WLCSP

WORLD WIDE OFFICE LOCATIONS

Headquarters:
Trondheim, Norway
Tel: +47 72 89 89 00

For more information
Visit www.nordicsemi.com for the complete product specification about this and any other wireless ULP products.

About Nordic Semiconductor
Nordic Semiconductor is a fabless semiconductor company specializing in ULP short-range wireless communication. Nordic is a public company listed on the Norwegian stock exchange.