nRF52840 DK
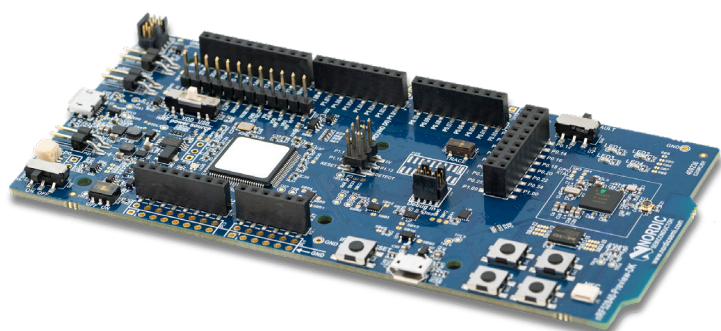
Development kit for Bluetooth 5/Bluetooth mesh/Thread/Zigbee/802.15.4/ANT/2.4 GHz

KEY FEATURES

- Affordable, single-board development kit for the nRF52811 and nRF52840 SoCs
- Bluetooth 5 multiprotocol radio
  - 2 Mbps
  - Long Range
  - Advertising Extensions
  - Channel Selection Algorithm #2 (CSA #2)
- IEEE 802.15.4 radio support
  - Thread
  - Zigbee
- Arm® Cortex™-M4 with floating point support
- DSP instruction set
- Arm CryptoCell CC310 cryptographic accelerator
- Arduino Rev3 compatible connector for use with 3rd party shields
- All I/Os (48) and interfaces available via connectors
- Segger J-Link OB programming/debugging supported
- Support for programming/debugging of external boards
- USB interface direct to nRF52840 SoC
- USB interface to power and program/debug
- External memory on-board
- Integrated 2.4 GHz PCB antenna
- NFC antenna
- Connector for external NFC antenna
- SWF RF connector for direct RF measurements
- Pins for power consumption measurements
- 4 × user-programmable buttons
- 4 × user-programmable LEDs
- Coin-cell battery holder
- 1.7-5.5 V supplied from battery, external or USB

Product Overview

The nRF52840 DK is an affordable single-board development kit for *Bluetooth*® 5, Bluetooth mesh, Thread, Zigbee, ANT, 802.15.4 and 2.4 GHz proprietary applications using the nRF52840 multi-protocol SoC. The nRF52840 DK also supports development for the nRF52811.

The kit is compatible with the Arduino Uno Rev3 standard making it possible to use a wide range of 3rd-party shields during development.

The kit has access to all I/Os (48) and interfaces via connectors and there is an integrated PCB trace antenna and an RF connector for direct RF test measurements. There is also a connector for an external NFC antenna (included in kit).

Free software development tools, including protocol stacks (SoftDevices) and software development kits, are available to download from www.nordicsemi.com

Bluetooth 5 - Longer range and higher throughput

The nRF52840 is ready to take advantage of the considerable performance improvements for Bluetooth Low Energy (LE) with the arrival of the Bluetooth 5 specification. Of greatest importance is the support for longer range (up to x4 compared to Bluetooth 4.x) and doubling of on-air data rate, up to 2 Mbs from 1 Mbs in Bluetooth 4.x

Bluetooth 5 data rates	2 Mbs (New)	High throughput
	1 Mbs	Existing Bluetooth LE data rate
	500 kbs (New)	Longer range
	125 kbs (New)	Longest range

APPLICATIONS

- Advanced wearables
  - Advanced personal fitness devices
  - Connected Health
- IoT
  - Connected Home sensors and controllers
  - Industrial IoT sensors and controllers
- Interactive entertainment devices
  - Advanced remote controls
  - Gaming controllers
  - Virtual/Augmented Reality applications

High link budget for in-home applications

The nRF52840 is the ideal solution for smart connected home applications. It supports both Bluetooth 5's long range feature and also 802.15.4 which is already a popular technology for home networking protocols. With a maximum output power of 8 dBm a total link budget of >111 dBm is achievable for achieving robust communications through objects within the home.

Arm CryptoCell 310

The nRF52840 features an on-chip Arm CryptoCell 310 cryptographic hardware accelerator. CryptoCell offers a wide range of ciphers and security features for building solid security into applications from the ground up. Use of CryptoCell also makes associated security operations run faster and uses less processing time and power than equivalent operation carried out in software by the CPU.

OTA-DFU

The nRF52840 is supported by Over-the-Air Device Firmware Upgrade (OTA-DFU). This allows for in the field updates of application and/or protocol stack.

Nordic SoftDevices

Nordic protocol stacks are known as SoftDevices. SoftDevices are pre-compiled binaries without runtime dependencies. They reside in a separate memory location to your application and offer safer, easier, and more secure application development.

S140 SoftDevice

The S140 SoftDevice supports 20 Bluetooth LE links in concurrent operation operation for all 4 roles (Central/Peripheral/Broadcaster/Observer). The S140 is a Bluetooth 5 qualified stack and as such supports the latest long range and high throughput features introduced in Bluetooth 5.

nRF52840 DK COMPATIBLE SOFTDEVICES

S112	Memory-optimized Bluetooth 5 protocol stack for the nRF52810, nRF52811 and nRF52832 SoCs
S140	Feature complete Bluetooth 5 protocol stack forthe nRF52840 SoC
S340	Combined Bluetooth 5 and ANT protocol stack for the nRF52840 SoC

RELATED PRODUCTS

nRF52 DK	Development kit for the nRF52810 and nRF52832 SoCs
nRF52840	SoC for Bluetooth 5/Bluetooth mesh/802.15.4/Thread/Zigbee/ANT/2.4 GHz
nRF52832	SoC for Bluetooth 5/Bluetooth mesh/ANT/2.4 GHz
nRF52811	SoC for Bluetooth 5.1/802.15.4/Thread/Zigbee/ANT/2.4 GHz
nRF52810	SoC for Bluetooth 5/ANT/2.4 GHz
nRF5 SDK	Main software development kit for Bluetooth 5, ANT and 802.15.4
nRF5 SDK for Mesh	Software development kit for Bluetooth mesh
nRF5 SDK for Thread and Zigbee	Software development kit for Thread and Zigbee

ORDER INFORMATION

nRF52840-DK	Development Kit for nRF52840 SoC

WORLD WIDE OFFICE LOCATIONS

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

For more information
Visit **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.

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