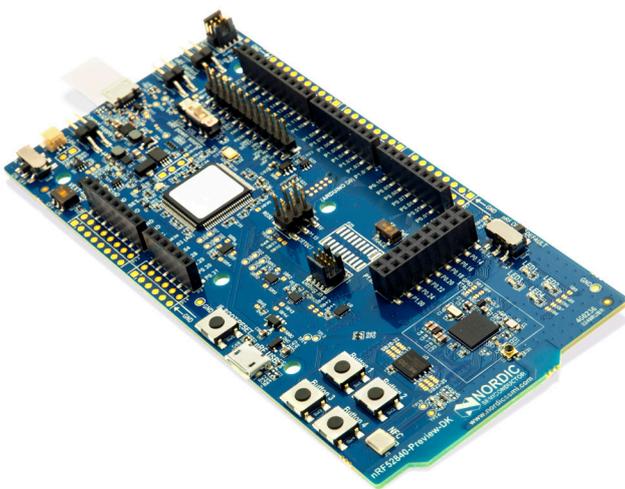


# nRF52840 DK

Development Kit for Bluetooth 5/Bluetooth mesh/Thread/802.15.4/ANT/2.4GHz on the nRF52840 SoC



## Product Overview

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

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

The kit has access to all I/O (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 interfacing to an external NFC antenna (included in kit).

Free software development tools, including protocol stacks (SoftDevices) and the nRF5 SDK, are available to download from [www.nordicsemi.com](http://www.nordicsemi.com)

## Bluetooth 5 - Longer range, and higher throughput

The nRF52840 is ready to take advantage of the considerable performance improvements for Bluetooth 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 2Mbps from 1Mbps in Bluetooth 4.x

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

## KEY FEATURES

- Bluetooth 5 ready multi-protocol radio
  - 2Mbps
  - Long range
  - Advertising extensions
  - Improved coexistence (CSA #2)
- IEEE 802.15.4 radio support
  - Thread
  - Zigbee
- ARM® Cortex™-M4F
- DSP instruction set
- ARM CryptoCell CC310 cryptographic accelerator
- Arduino Rev. 3 compatible connector for use with 3rd party shields
- All I/O (48) and interfaces available via connectors
- Segger J-Link OB Program/Debug supported
- Support for Program/Debug of external target boards
- USB interface direct to nRF52840 SoC
- USB interface to power and Program/Debug MCU
- External memory on-board
- Integrated PCB antenna
- SWF RF connector for direct RF measurements
- Connector for external NFC antenna
- Pins for power consumption measurements
- Compatible with Nordic Power Profiler Kit
- 4 × user-programmable buttons
- 4 × user-programmable LEDs
- Coin-cell battery holder
- +5.5v – +1.7v operation from battery, external or USB

## 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 8dBm a total link budget of >111dBm 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. The nRF52840 is supported by the S140 SoftDevice.

### S140 SoftDevice

The S140 SoftDevice supports 20 Bluetooth LE links in concurrent 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 compatible SoftDevices

S140	20-link concurrent Bluetooth 5 protocol stack
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### RELATED PRODUCTS

nRF52840 DK	Development kit for nRF52840
S140 Soft-Device	20-link concurrent Bluetooth 5 protocol stack
nRF5 SDK	Software Development Kit for nRF52 Series SoCs
nRF5 SDK for HomeKit	SDK for Apple HomeKit applications
nRF5 SDK for Thread	SDK for Thread applications
nRF5 SDK for mesh	SDK for Bluetooth mesh applications

### ORDER INFORMATION

nRF52840-DK	Development Kit for nRF52840 SoC
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## WORLD WIDE OFFICE LOCATIONS

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Trondheim, Norway  
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### For more information

Visit [nordicsemi.com](http://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.

