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 test measurements
- Pins for power consumption measurements
- 4 x user-programmable buttons
- 4 x user-programmable LEDs
- Coin-cell battery holder
- 1.7-5.5 V supplied 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

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

<table>
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<th>Bluetooth 5 data rates</th>
<th>2 Mbs (New)</th>
<th>High throughput</th>
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<tr>
<td>1 Mbs</td>
<td>Existing Bluetooth LE data rate</td>
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<td>500 kbs (New)</td>
<td>Longer range</td>
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<tr>
<td>125 kbs (New)</td>
<td>Longest range</td>
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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/Observing). 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 for the 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

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.