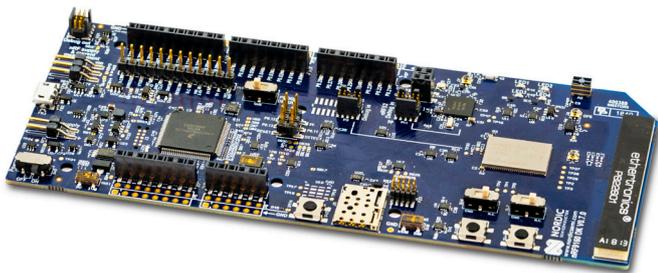


nRF9160 DK

Development Kit for LTE-M/NB-IoT/GPS/Bluetooth Low Energy



Product Overview

The nRF9160 DK is an affordable, pre-certified single board development kit for evaluation and development on the nRF9160 SiP for LTE-M and NB-IoT. It includes an nRF52840 board controller that for example can be used to build a Bluetooth® Low Energy gateway.

It has a dedicated LTE-M and NB-IoT antenna that supports a wide range of bands, to operate globally. It has a dedicated antenna for GPS, and a 2.4 GHz antenna to be used with Bluetooth 5, Bluetooth mesh, Thread and Zigbee. SWF RF connectors are available for all antennas.

All GPIOs and interfaces are available via connectors. The kit is Arduino Uno Rev3 compatible, meaning it can be easily interfaced with external device shields. User-programmable LEDs(4), buttons(2) and switches(2) are available to easily give input and get output.

The nRF9160 DK has both a 4FF SIM card slot and an MFF2 SIM footprint, to support both plug-in and soldered (e)SIMs. It is bundled with a eSIM card from iBasis preloaded with 10 MB.

Programming and debugging is enabled through the Segger J-Link OB, which also supports external targets.

The nRF9160 DK is supported by a full suite of development software and tools. All free to download and use commercially.

nRF Connect SDK includes everything needed to get started, application layer protocols, examples, peripheral drivers and more. The kit can easily be connected to our cloud solution, nRF Connect for Cloud. The LTE Link Monitor tool provides an AT command interface that enables you to test your link, and extract information about the network.

Everything is available for download from www.nordicsemi.com.



KEY FEATURES

- Single board development kit for the nRF9160 SiP
- Bands supported:
 - US: B2, B4, B5, B12, B13
 - EU/APAC: B3, B8, B20, B28
- Certifications: CE, FCC
- nRF52840 board controller
- Arduino Uno Rev3 compatible
- LTE-M/NB-IoT, GPS and 2.4 GHz antennas
- SWF RF connectors for all antennas
- 4FF SIM card slot and MFF2 SIM footprint
- Segger J-Link OB programmer/debugger
- Pins for measuring power consumption
- User-programmable LEDs(4), buttons(2) and switches(2)
- 3.3 - 5.5 V supply from battery, external or USB

nRF9160 SiP

- Multimode LTE-M/NB-IoT modem
 - Pre-certified for global operation
 - 700 MHz - 2.2 GHz band support
 - 23 dBm output power
 - Assisted GPS
 - eDRX and PSM power saving modes
 - Coverage enhancement modes
 - Single pin 50 Ω antenna interface
 - UICC interface
- Application processor
 - 64 MHz Arm® Cortex®-M33 CPU
 - Arm TrustZone® for trusted execution
 - Arm CryptoCell 310 for application layer security
 - 1 MB Flash & 256 KB RAM
 - 4 x SPI/UART/TWI, PDM, I2S, PWM, ADC

nRF52840

- Board controller
- Bluetooth 5, Bluetooth mesh, Thread and Zigbee
- 64 MHz Arm Cortex-M4F CPU
- 1 MB Flash & 256 KB RAM

APPLICATIONS

- Logistics and asset tracking
- Smart City
- Smart Agriculture
- Industrial & Predictive maintenance
- Wearables & Medical

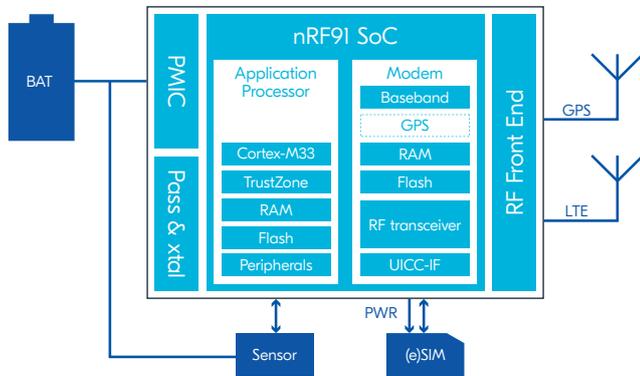
nRF9160 SiP

The nRF9160 SiP is a low power SiP integrating a dedicated application processor and a multimode LTE-M and NB-IoT modem. It is the most compact cellular IoT (cIoT) solution on the market, measuring just 10×16×1 mm.

The application processor includes a 64 MHz ARM Cortex-M33 CPU with 1 MB of Flash and 256 KB of RAM dedicated for the application. It has ARM TrustZone for trusted execution and ARM CryptoCell for application layer security. It has a wide range of interfaces to communicate with sensors and actuators.

The multimode modem supports the eDRX and PSM power saving modes and the coverage enhancement features modes of LTE-M and NB-IoT, and has an assisted GPS integrated. The global RF Frond End supports bands from 700 MHz to 2.2 GHz, has 23 dBm output power and offers a single pin 50 Ω antenna interface.

The LTE stack layers L1-L3, IPv4/IPv6, TCP/UDP, TLS/DTLS will be in the modem firmware. The application processor can communicate with the modem through a BSD secure sockets API and will include the application layer protocol, for example CoAP, MQTT and LWM2M, and the application itself.



Designed for true low power cIoT

The nRF9160 SiP is specifically designed to take full advantage of the energy efficiency possibilities associated with the LTE-M and NB-IoT standards. All hardware and software is designed at Nordic, and as such offers an unparalleled, high efficient and optimized low power cIoT solution.

It can do application processing at 70 uA/MHz, maintain connection with the cellular network at as low as 10 uA average and upload small amounts of data (4 bit/s = 1.8 kB/hour) at as low as 25 uA average current.

Security

The integrated cryptographic and security features enables the nRF9160 SiP to meet the latest requirements on internet security and authentication. By including trusted execution capability on the application processor, it takes security a step further by securing the most critical processes and peripherals in the application.

The on-chip modem is its own security island and runs only encrypted and signed firmware images from Nordic. It offers TLS/DTLS secured sockets to the application over an on-chip inter-processor communication interface.

SIM and eSIM support

The nRF9160 LTE modem supports both SIM and eSIM, plug-in or soldered. It provides power and handles all communication automatically.

Flexible modem firmware

The necessary firmware for the LTE modem in nRF9160 SiP is offered as pre-qualified and precompiled downloads, and can be programmed using a serial programming tool or over-the-air.

For latest status on certifications go to: nordicsemi.com/9160cert

RELATED PRODUCTS

nRF Connect SDK	Software Development Kit for the nRF9160 DK
nRF Connect for Cloud	Cloud solution for LTE-M and NB-IoT
LTE Link Monitor	Development tool providing an AT command user interface
Programmer	Programming user interface

ORDER INFORMATION

nRF9160-DK	Development Kit for nRF9160 SiP
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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.

