UNRF5-M22 module UM

For evaluation need MDK board

Chapter 1
Introduction

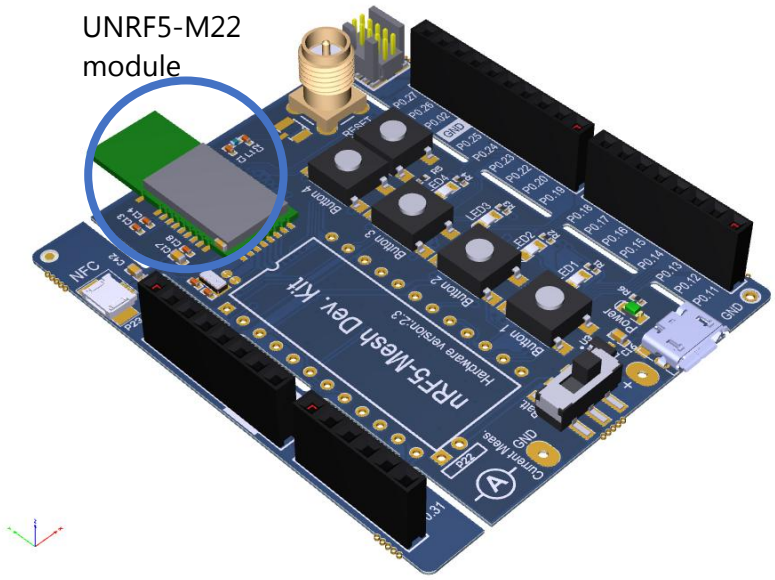
The nRF5 Mesh Development Kit includes hardware, firmware source code, documentation, hardware schematics, and layout files.

The key features of the development kit are:

- nRF5-M22™ ANT/ANT+, *Bluetooth*® low energy 5. 0 and mesh Module
- Buttons and LEDs for user interaction
- I/O interface for DIP-24 form factor plug-in socket, for motion and environmental sensors
- SEGGER J-Link debugger interface, 10 pins and 1.27mm pitch
- Supporting NFC-A listen mode
- USB/external power or double AA batteries power source
- IPEX to SMA connector, enable external high gain antenna
- System current consumption measure interface

For access to firmware source code, hardware schematics, and layout files, see www.ultune.com.

Figure 1: nRF5 Mesh Development Kit board



Environmental Protection

Waste electrical products should not be disposed of with household waste.

Please recycle where facilities exist. Check with your local authority or retailer for recycling advice.

Chapter 2
Setting up the mesh DK

Before you start developing, prepare your development kit hardware by completing a few easy steps and download the required software.

1. To set up the hardware, follow the instructions in Getting started with the nRF5 Mesh Development Kit.
2. To set up the software, follow the instructions in Nordic tools and downloads in nRF5 Getting Started. Actual software required depends on your OS and Development IDE.

Chapter 3
Software tools

The extensive range of supporting software tools help you with testing and programming on your chip.

- **S140 SoftDevice:** *Bluetooth*® low energy concurrent multi-link protocol stack solution supporting simultaneous Central/Peripheral/Broadcaster/Observer role connections.
- **nRF5 SDK:** The nRF5 Software Development Kit (SDK) provides source code of examples and libraries forming the base of your application development.
- **nRF5x Command Line Tools:** nRF5x Tools is a package that contains JLinkARM, JLink CDC, nRFjprog, and mergehex. The nRFjprog is a command line tool for programming nRF5x Series chips. It is also useful in a production setup. See also nRF5x Command Line Tools.
- **nRF5x-pynrfjprog:** the nRF5x-pynrfjprog utility is a simple Python interface for the nrfjprog DLL. It is useful for scripting, especially in automated tests. See also nRF5x pynrfjprog.
- **nRFgo Studio:** nRFgo Studio is a graphical user interface for programming nRF5x SoftDevices, applications, and bootloaders.
- **nRF Connect for desktop:** nRF Connect is a desktop application for getting familiar with, developing, and testing *Bluetooth*® low energy. nRF Connect allows you to set up a local device, connect it to advertising devices and discover their services, maintain the connection and the connection parameters, pair the devices and change the server setup for your local device. nRF Connect also offers a detailed log for troubleshooting purposes.
- **nRF Connect for mobile:** nRF Connect for mobile is a powerful generic tool that allows you to scan and explore your *Bluetooth*® low energy devices and communicate with them on a smartphone. nRF Connect for mobile supports a number of *Bluetooth*® SIG adopted profiles together with the Device Firmware Update (DFU) profile from Nordic Semiconductor.

We also recommend some third party software tools that are useful when developing with our products:

- **Keil MDK-ARM Development Kit:** Keil® MDK-ARM Development Kit is a development environment specifically designed for microcontroller applications that lets you develop using the nRF5 SDK application and example files.
- **SEGGER J-Link Software:** The J-Link software is required to debug using the J-Link hardware that is packaged with our development kits.

Chapter 4
Start developing

After you have set up the development kit and installed the toolchain, it is time to start

developing. There are several ways to continue from here:

- Running precompiled examples

  See the step by step instructions on how you can quickly test a precompiled example without having to use the full toolchain, it is a matter of copying and pasting a precompiled hex file onto your development kit board.
- Compiling and running a first example

  Test that you have set up your toolchain correctly by compiling, programming and running a very simple example.
- Running examples that use a SoftDevice

  Before you can run more advanced examples that use Bluetooth or ANT, you must first program the SoftDevice on the board.

FCC Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: this equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

● Reorient of relocate the receiving antenna.
● Increase the separation between the equipment and receiver.
● Connect the equipment into an outlet on a circuit difference from that to which the receiver is connected.
● Consult the dealer or an experienced radio/TV technician for help.

Important Note:

Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. Country Code selection feature to be disabled for products marketed to the US/Canada.

1. The transmitter module may not be co-located with any other transmitter or antenna.

As long as the three conditions above are met, further transmitter testing will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

Important Note:

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

End Product Labeling:

The final end product must be labeled in a visible area with the following "Contains FCC ID: 2ADJ4UNRF5M22"

If the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following; Contains Transmitter Module FCC ID: 2ADJ4UNRF5M22.

Manual Information to the End User:

The OEM integrator has to be aware not provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.
The end user manual shall include all required regulatory information/warning as show in this manual.
When the module is installed inside another device, the user manual of this device must contain below warning statements;

1. This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:
   1) this device may not cause harmful interference,
   2) this device must accept any interference received, including interference that may cause undesired operation.
2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. The devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.