

# **nRF52840 USB Dongle Kit**

User Manual V1.4

Custom P/N: 1069-5893

## Contents

Revision history .....	2
Introduction .....	3
Specifications .....	4
Kit content .....	4
Pinout diagram .....	5
Mechanical specifications .....	6
Ordering information .....	8
Certification .....	9
FCC Statement .....	9
End-Product Label .....	10

## Revision history

Date	Version	Description
April 12, 2022	V1.0	First release
April 13, 2022	V1.1	Add ordering information
July 11, 2022	V1.2	Update kit content
September 28, 2022	V1.3	Update specifications with pre-installed firmware.
October 13, 2022	V1.4	Update antenna connector to RPSMA Add Certification section.

## Introduction

The nRF52840 USB Dongle Kit is a versatile and low-cost development platform enabled by the nRF52840 multiprotocol SoC in a convenient USB dongle form factor.

The design features a programmable user button, RGB LED, up to 12 GPIOs and U.FL connector for external antenna. It can be used as a low-cost Bluetooth® Low Energy 5.0, Bluetooth Mesh, Thread, 802.15.4, ANT and user-proprietary 2.4GHz multiprotocol node or development kit.

Alternatively the USB Dongle can be configured as OpenThread Device with a simple connection to a PC or other USB enabled device.

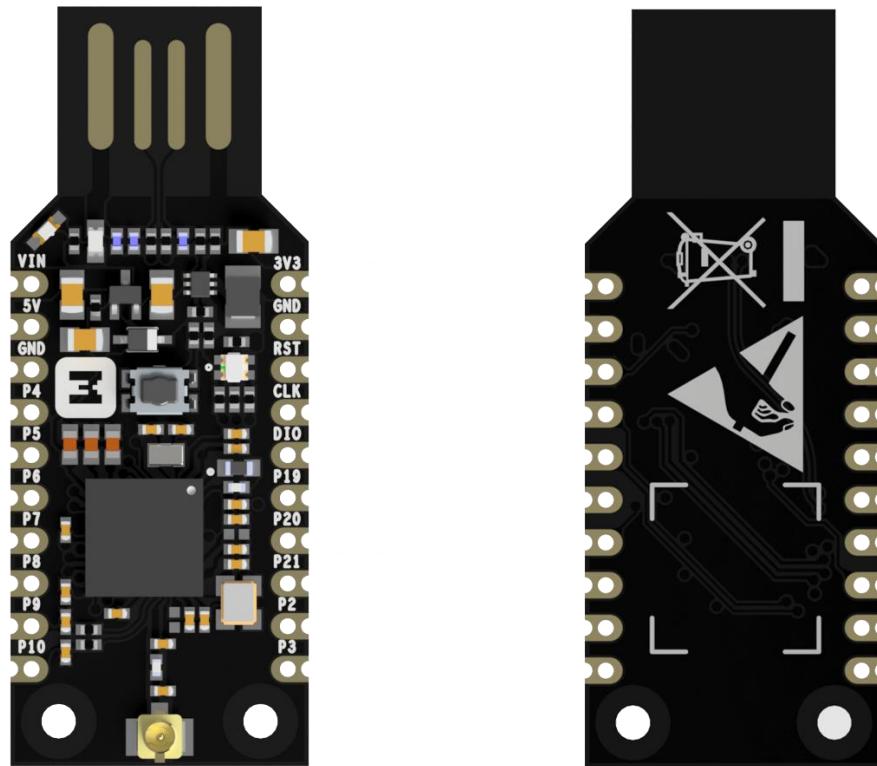


Figure 1 nRF52840 USB Dongle

# Specifications

- Nordic Semiconductor nRF52840 System-on-Chip
  - ARM® Cortex®-M4F processor optimized for ultra-low power operation
  - Combining Bluetooth® Low Energy 5.0, Bluetooth Mesh, Thread, 802.15.4, ANT and 2.4GHz proprietary
  - On-chip NFC-A tag
  - On-chip USB 2.0 (Full speed) controller
  - ARM TrustZone® Cryptocell 310 security subsystem
  - 1 MB FLASH and 256 kB RAM
- Up to 12 GPIOs available via headers
- User programmable Button and RGB LED
- IP54 compatible U.FL-to-RPSMA Coax RF Cable
- Tilt/Swivel 2.4GHz Antenna
- 3.3V regulator with 1A peak current output
- VBUS & VIN Power-Path Management
- Convenient USB dongle form factor
- Breadboard-friendly with dual 10-Pin headers
- Pre-installed with UF2 Bootloader and OpenThread Device firmware
- Measures 45.2mm x 17.8mm x 4.0mm without headers soldered in

# Kit content

- 1x nRF52840 USB Dongle (Kontron customized)
- 2x IP54 compatible U.FL-to-RPSMA Coax RF Cable
- 1x Tilt/Swivel 2.4GHz Antenna w/ RPSMA

## Pinout diagram

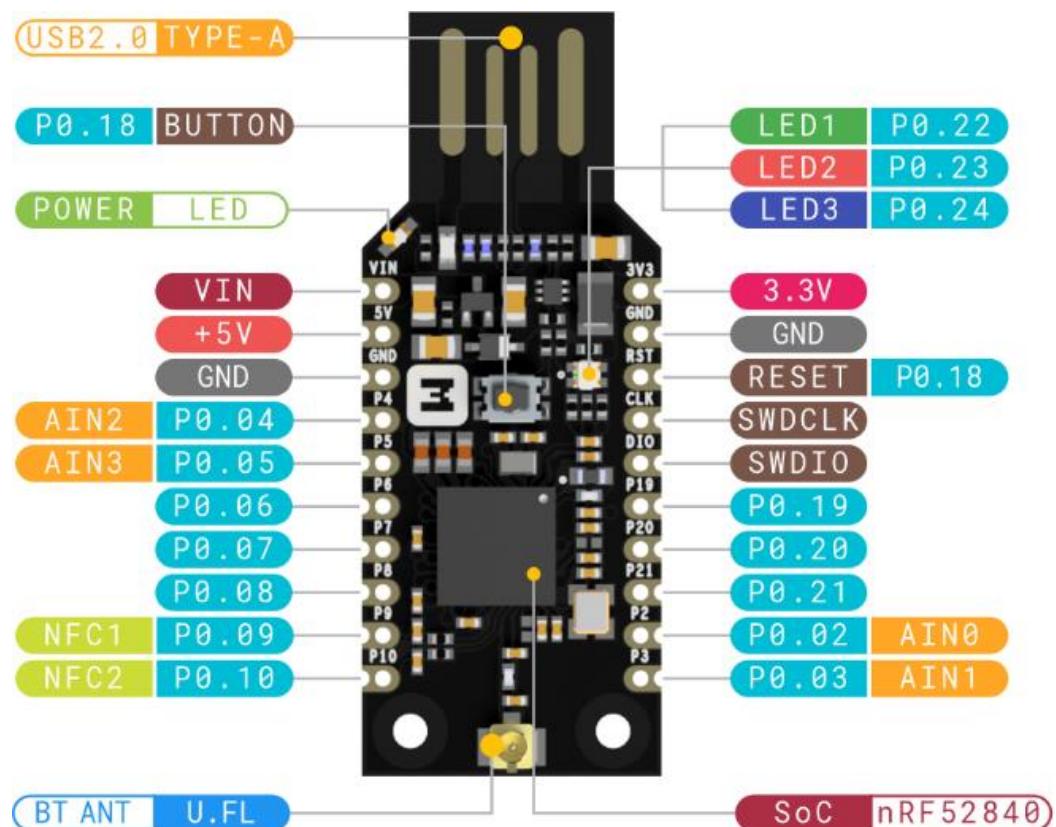


Figure 2 Pinout diagram

# Mechanical specifications

The mechanical specifications for the kit show the dimensions in millimeters.

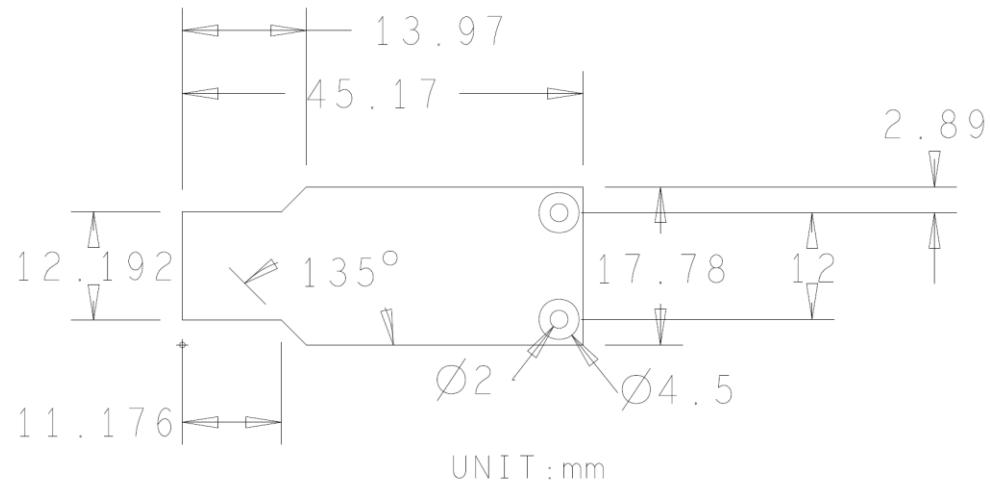


Figure 3 nRF52840 USB Dongle dimension

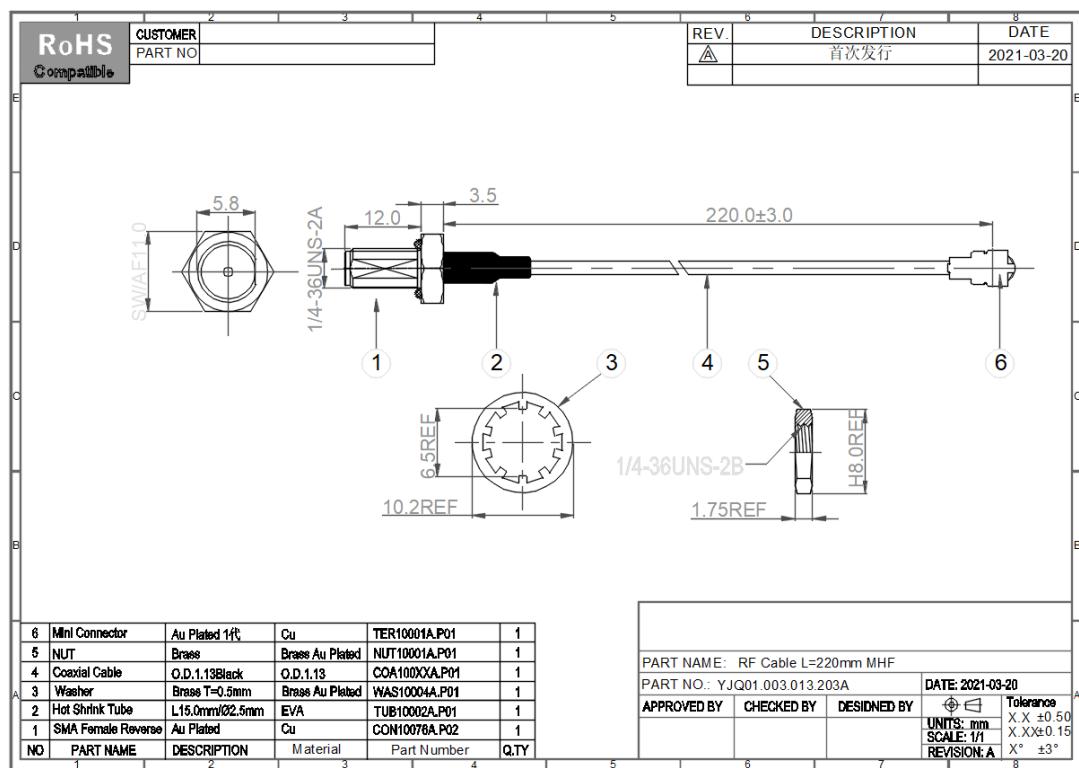


Figure 4 U.FL-to-RPSMA Coax RF Cable dimension

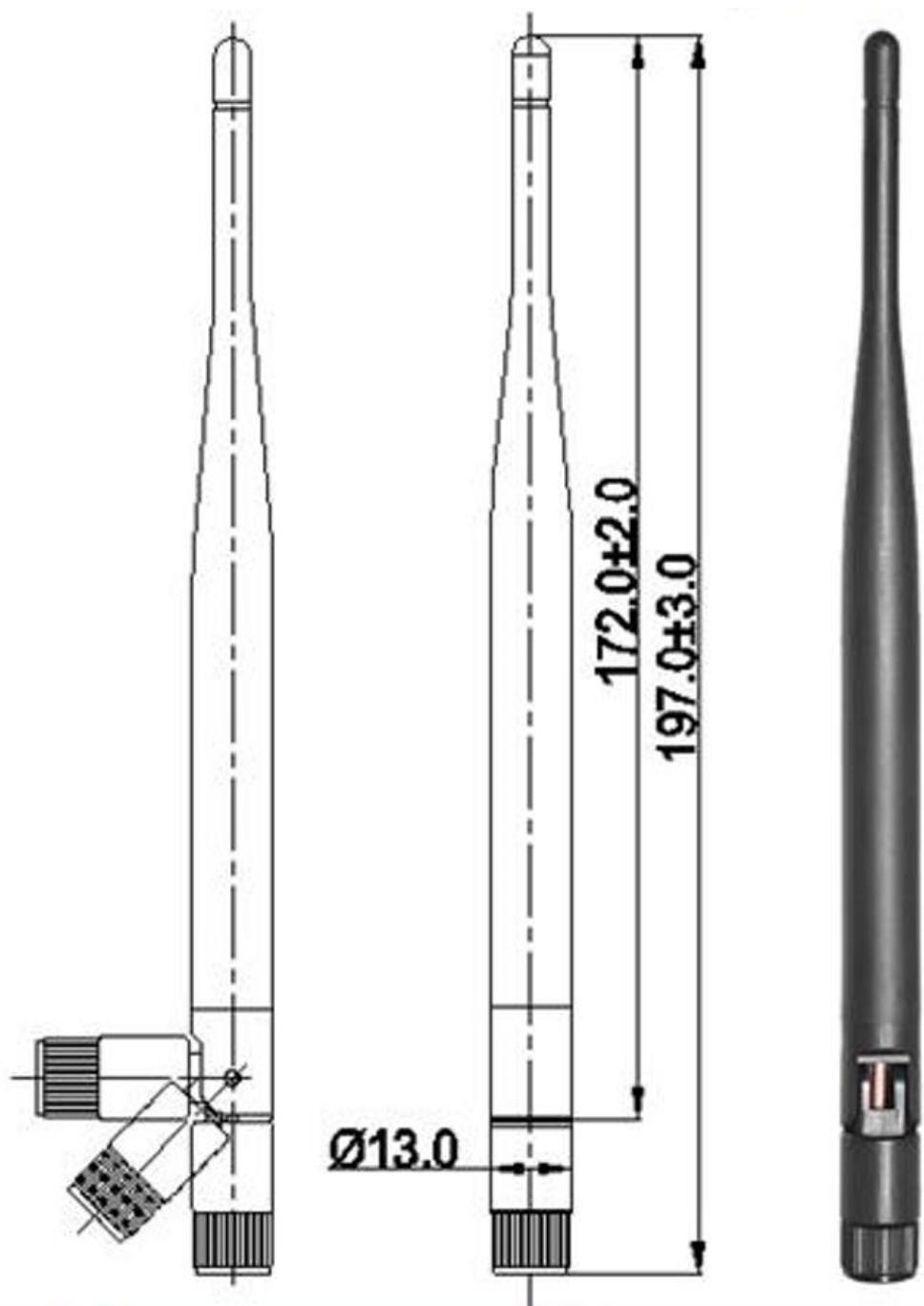


Figure 5 Tilt/Swivel 2.4GHz Antenna w/ RPSMA dimension

## Ordering information

Part Number	Part Name
501001001	nRF52840 USB Dongle Kit; Kontron

2.2List of applicable FCC rules: FCC Part15 Subpart C, Section 15.247

2.3Specific operational use conditions

This device is intended only for OEM integrators under the following conditions: The module must be installed in the host equipment such that 20 cm is maintained between the antenna and users, and the transmitter module may not be co-located with any other transmitter or antenna. The module shall be only used with the internal antenna(s) that has been originally tested and certified with this module. As long as 3 conditions above are met, further transmitter test 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 (for example, digital device emissions, PC peripheral requirements, etc.).

2.4Because the module has no shielding cover , it is a restricted module.

2.5 Not applicable. The module has its own antenna, and doesn't need a trace antenna etc.

2.6RF exposure considerations

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

2.7Antennas

Antenna Type:Rod antenna

Antenna Gain(Peak): 5dbi

2.8The final end product must be labeled in a visible area with the following: "Contain FCC ID: 2A8XG-UDK52".

2.9Operation Frequency: 2405-2480MHz

Number of Channel: 16 Channels

Modulation: O-QPSK

Host manufacturer must perform test of radiated & conducted emission and spurious emission,etc according to the actual test modes for a stand-alone modular transmitter in a host.

Only when all the test results of test modes comply with FCC requirements, then the end product can be sold legally.

2.10Additional testing Part15SubpartB disclaimer

The grantee should include a statement that the modular transmitter is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules )listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification .If the grantee markets their product as being Part 15SubpartB compliant( when it also contains unintentional - radiator digital circuit y) , then the grantee shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed .

Federal Communication Commission Statement (FCC, U.S.)

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 of the following measures:

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

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.

FCC Caution:

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

## **End-Product Label**

It is suggested using following content adding to package or user manual or label to obey the regulation. Any rules of end-product label shall refer to each regulation for final reference.

### **FCC**

The product is too small to place complete label information, so the label is placed in the user manual.

The final end product must be labeled in a visible area with the following: "Contain FCC ID: 2A8XG-UDK52".