PAN B511-1C
Bluetooth 6 & 802.15.4 Module

Preliminary

OVERVIEW

The PAN B511-1C is a Bluetooth 5.4 Low Energy (LE) module based on the Nordic nRF54L15 single chip controller.

It is available with an on-board chip antenna for easy design-in and facilitated end-certification. The all-in-one SoC including a superset of the most prominent nRF54 Series features combined with more performance and memory, while minimizing current consumption. In addition, the ultra-low current consumption of the PAN B511-1C makes the module an ideal choice for battery powered devices. The small size hybrid castellated holes & LGA footprint design offers the possibility for optical outgoing inspection, 2-layers designs and fast prototyping with hand soldering, while still offering more GPIOs on the bottom if needed.

The module is intended to be certified for CE RED, FCC, ISED and MIC.

Module Features

- **Integrated Chip Antenna**

- **Dimensions [mm]:**
  10.35 x 9.8 x 1.9

- **Temperature Range (°C):** -40 to 85

- **Optional:**

  Integrated Slow Clock Crystal

  Additional 4 MB Flash Memory

- **Available Peripherals:**
  GPIOs(32), High-speed SPI/UART, 4x SPI/UART/TWI, PDM, I2S, PWM, QDEC, ADC
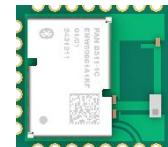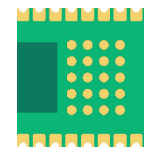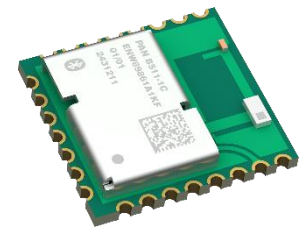
FEATURES

- Ultra-low-power multiprotocol 2.4 GHz radio
- Integrated multi-purpose MCU functionality
- 128 MHz Arm Cortex-M33 processor
- 1.5 MB NVM and 256 KB RAM
- Comprehensive set of peripherals, including new Global RTC available in System OFF, 14-bit ADC, and high-speed serial interfaces
- Secure boot, secure firmware update, secure storage
- Cryptographic accelerator with side-channel leakage protection, tamper detectors

TECHNICAL CHARACTERISTICS (tbc)

Max. output power Bluetooth	Up to 8 dBm
Typical sensitivity Bluetooth	-98 dBm (at 1 Mb/s) and -106 dBm (at 125 kb/s in LE-mode – long range)
Voltage range	1.7 to 3.6 V

PLANNED CERTIFICATIONS

Europe (CE RED), USA (FCC), CANADA (ISED), JAPAN (MIC)

SOFTWARE

Applications are being developed with Nordic's nRF Connect SDK. nRF Connect SDK is a scalable and unified software development kit for building products based the nRF54 Series wireless devices. It offers developers an extensible framework for building size-optimized software for memory-constrained devices as well as powerful and complex software for more advanced devices and applications. It integrates the Zephyr RTOS and a wide range of samples, application protocols, protocol stacks, libraries and hardware drivers.

More informations here: https://www.nordicsemi.com/Products/Development-software/nRF-Connect-SDK

PART NUMBERS

Partnumber	Module Name	Description
ENW89861A1KF	PAN B511-1C Premium	Bluetooth 6 & 802.15.4 Module based on nRF54L15 with integrated Chip antenna, integrated Slow Clock and additional 4 MB Flash Memory.
ENW89861A2KF	PAN B511-1C Standard	Bluetooth 6 & 802.15.4 Module based on nRF54L15 with integrated Chip antenna and integrated Slow Clock.
ENW89861A3KF	PAN B511-1C Economy	Bluetooth 6 & 802.15.4 Module based on nRF54L15 with integrated Chip antenna.
ENW89861AXKF	PAN B511-1C EVB	Evaluation Board with PANB511-1C Economy module with 8 MB Memory and slow clock on EVB

BLOCK DIAGRAM
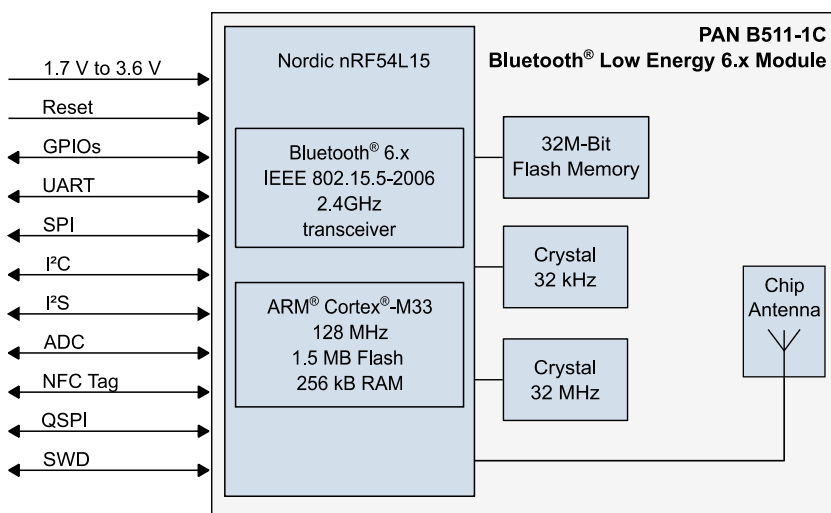
HOW TO EVALUATE?

PAN B511-1C EVB
The B511-1C Evaluation Board (ENW89861AxKF) features a PAN B511-1C module module which is based on the Nordic Semiconductor nRF54L15 single-chip controller. You can access all the different module interfaces like UART, GPIOs, current measurement pins, and Segger J-Link on-board debugger easily, which makes the evaluation board ideally suited for the evaluation of the module and rapid prototyping of products.