

New Product Introduction

PAN1770 Bluetooth® 5.1 Low Energy Module



The **PAN1770** is a Bluetooth 5.1 Low Energy (LE) module based on the Nordic nRF52840 single-chip controller that allows you to attach an external antenna via uFL. The Bluetooth 5.1 features additionally a higher symbol rate of 2 Mbps using the high-speed LE 2M PHY or a significantly longer range using the LE coded PHY at 500 kb/s or 125 kb/s. The new channel selection algorithm (CSA#2) improves the performance in high interference environments. Furthermore, the new LE advertising extensions allow for much larger amounts of data to be broadcasted in connectionless scenarios.

An output power of up to 8 dBm and the high sensitivity of the nRF52840 in combination with the LE coded PHY make the module very attractive in applications, where a long range is required. In addition, the ultra-low current consumption of the **PAN1770** make the module an ideal choice for battery powered devices. With the Cortex® M4F processor, 256 kB RAM and the build-in 1 MB flash memory the **PAN1770** can easily be used in standalone mode, thereby eliminating the need for an external processor, saving complexity, space, and cost. The rich set of security features from the ARM TrustZone® CryptoCell 310 security subsystem provide the necessary means for secure device operation in the IoT space. The **PAN1770** also supports Type 2 Near Field Communication (NFC-A) for use in simplified pairing and payment solutions (external antenna required).

General Features And Benefits

- Bluetooth 5.1 (Long Range, 2Mbps PHY)
- ARM® Cortex®-M4F (64MHZ) with 1 MB flash memory and 256 kB internal RAM
- Includes ARM® TrustZone® Cryptocell 310 and supports secure boot including Root-of-Trust
- New channel selection algorithm (CSA#2) improves the performance in high interference environments
- Up to 48× General Purpose I/Os (GPIO), which are shared by up to 4× SPI, 2× I²C, 2× UART, 4× PWM, 8× ADC, NFC-A, 32 kHz IN/OUT, nRESET
- USB 2.0 full-speed device interface
- REACH and RoHS Compliant
- Over-the-air update of application software

PAN1770 Additional Features

- Surface Mount Type (SMT) 15.6 mm x 8.7 mm x 2.05 mm
- Typical max. output power 8 dBm, configurable from -20 dBm in 4dB steps
- Sensitivity -95 dBm @ 1 Mb/s and -103 dBm @ 125 kb/s
- Current consumption of 4.8 mA in TX (@ 0 dBm) and 4.8 mA in RX mode
- On-module DC-DC and LDO regulators with automated low current modes
- Voltage range: 1.7 V to 5.5 V
- Typical current consumption: 0.4 µA in System OFF mode, 1.5 µA with RTC wake up
- Temperature range: -40 °C to 85 °C
- Certified Antenna list

Approved Antenna List

Item	Part Number	Manufacturer	Frequency Band (GHz)	Type	Max. Gain (dBi)
1	W1030 2016693-x	Pulse TE Connectivity	2.4	Dipole antenna assembly	+1.4

Software

The nRF Connect SDK is the best way to easily implement applications on the PAN1770 module.
[nRF Connect SDK - nordicsemi.com](https://nordicsemi.com/nRF-Connect-SDK)

PAN1770 Series Evaluation

The PAN1770 evaluation board allows easy and fast connection to a PC through a USB to UART converter. Thus, application functions can be tested quickly and easily without much wiring effort. All GPIOs are led out via pin headers and the Arduino form factor allows the connection of shields available on the mass market.

Please visit our Wireless Connectivity Development Hub for Evaluation: [Wireless Connectivity Development Hub \(panasonic.de\)](https://panasonic.de/Wireless-Connectivity-Development-Hub)

Part Number Information

Part Numbers	Description	Series Name
ENW89854C1KF	Bluetooth Low Energy Single Mode with U.FL connector Empty Flash	PAN1770
ENW89854C2KF	Bluetooth Low Energy Single Mode with U.FL connector Access Port Protection APPROTECT HW Empty Flash	PAN1770
ENW89854CXKF	Kit containing: 1× PAN1770 Evaluation Board with ENW89854C1KF, 1× PULSE W1030, 1× TE Cable 2016693-2	PAN1770 EVB
ENW89854CZKF	Kit containing: 1× PAN1770 Evaluation Board with ENW89854C2KF, 1× PULSE W1030, 1× TE Cable 2016693-2	PAN1770 APP EVB

Block Diagram

