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PAN1783 Module Introduction

Bluetooth Low Energy Module

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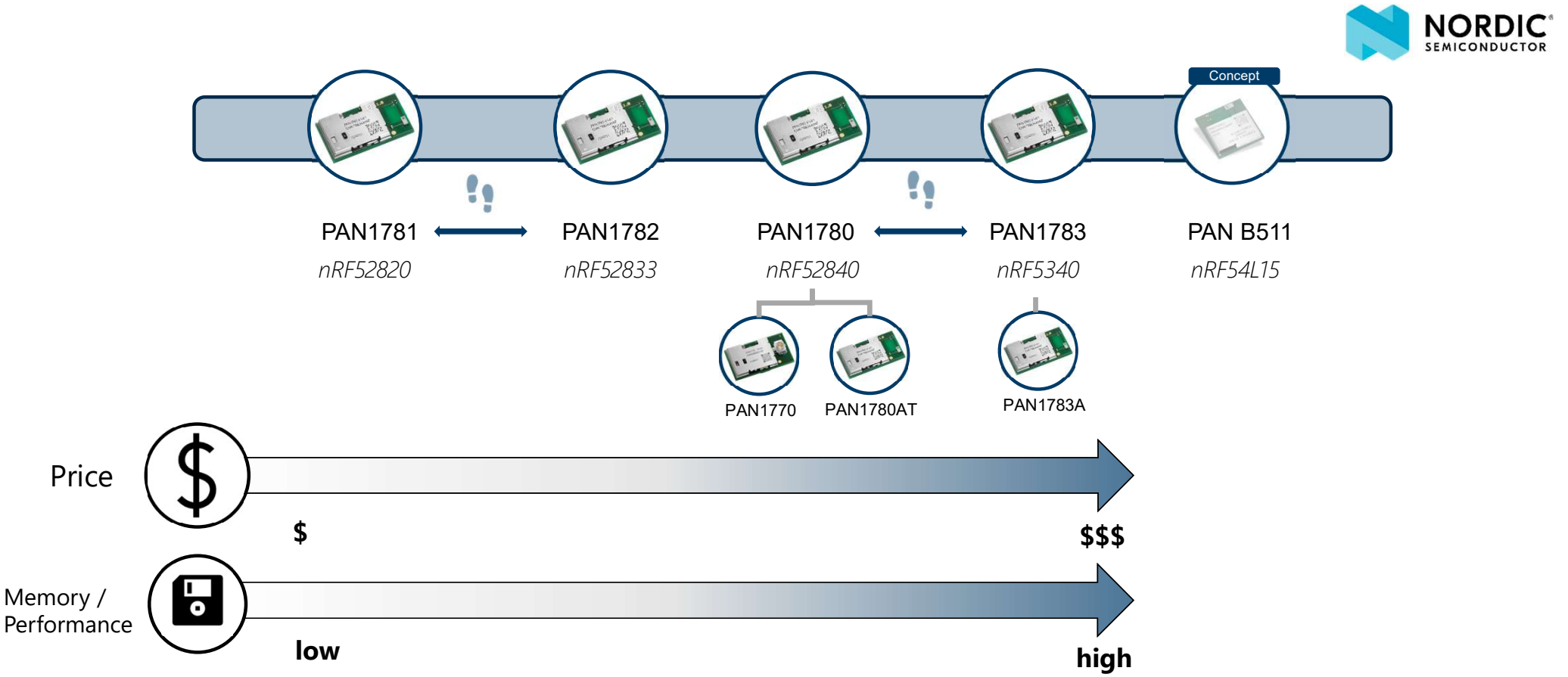
Agenda

- Panasonic Nordic based modules
- PAN1783 Module Specifications
- Antenna options
- PAN1780 vs PAN1783 Comparison
- Dual Core Processor Features
- Development Kits
- Applications

Nordic portfolio and planned extension

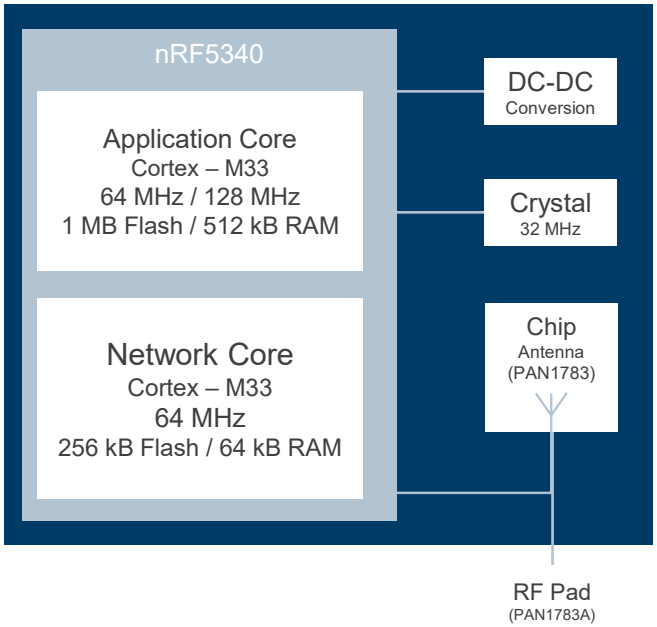


PAN1783 Series – Bluetooth 5.4 & 802.15.4

Bluetooth Low Energy 5.4

- 2 Mbps high-speed PHY
- Long range coded PHY
- **Support: Mesh, Zigbee, Thread**
- **Direction finding (AoA & AoD)**
- **BLE Audio**

- PSA Certified Level 2
- CryptoCell CC312



Supporting LE Audio

Higher performance

Antenna flexibility

Certifications for:

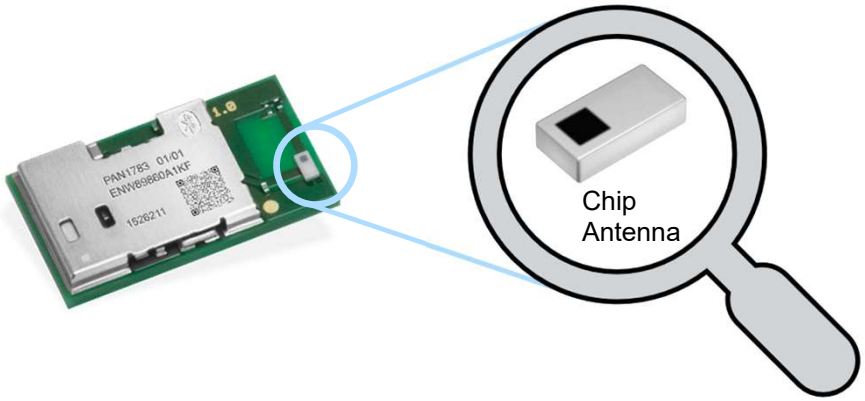
CE RED FCC ISED

NORDIC SEMICONDUCTOR nRF5340	
Standalone	nRF Connect SDK
ARM Cortex-M33 (124 MHz) ARM Cortex-M33 (64 MHz)	
1 MB (App) 256 kB (Net) *Flash*	512 kB 64 kB *RAM*
+3 dBm *output power*	-103 dBm *sensitivity*
Chip (PAN1783) RF Pad (PAN1783A) *Antenna*	-40° to +85° *temperature range*
15.6 x 8.7 x 2.1 [mm] *size*	

PAN1783 – Antenna Options

- **PAN1783 is available in 2 Antenna options:**

Integrated Antenna



For **small space** and **cost-effective** integration.

External Antenna

Frequency	2.4 Ghz
Gain	+5,9dBi
Connector	RP-SMA
Omnidirectional pattern	

Taoglas GW.34.5153

Length (min.)	50 - 300 mm
Connector	RP-SMA to uFL

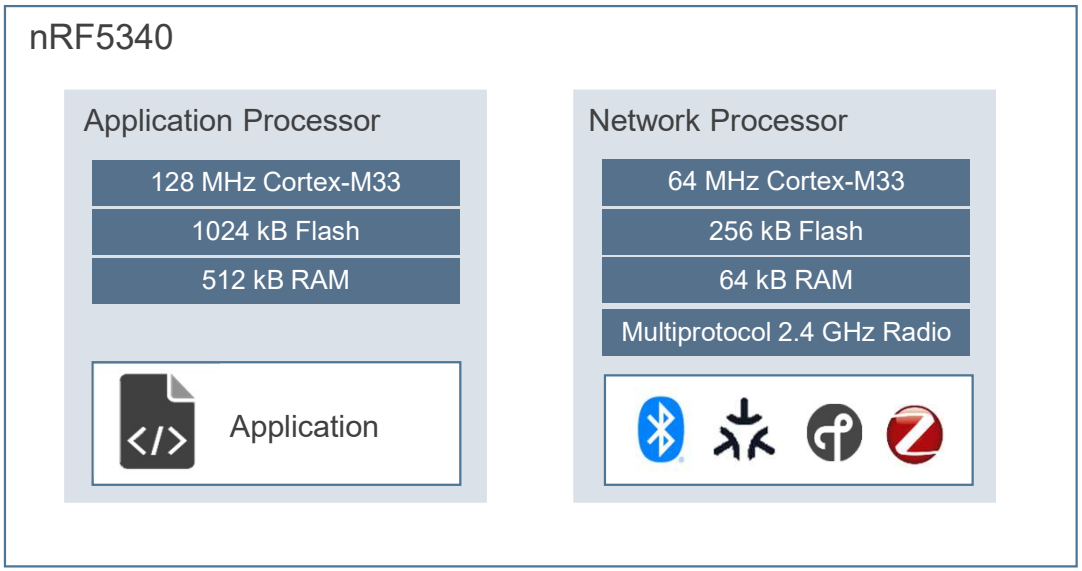
Antenna cable: CAB.6xxxx

PAN1783 – Feature comparison with PAN1780

Feature	PAN1780	PAN1783	Comment
Processing	Cortex M4F (64 MHz)	Cortex M33F (**128 MHz**) + **Cortex M33 (64 MHz)**	PAN1783 has Dual Core architecture. i.e. a dedicated Network Core next to the Application Core
Memory	1 MB Flash 512 kB RAM	1 MB **+ 256 kB Flash** 512 kB **+ 64 kB RAM**	Additional Memory for Network Core PAN1783 supports external Flash with up to 96 MHz and XiP
GPIO	48	48	PAN1783: 5× SPI, 4× I²C, 4× UART vs PAN1780: 4× SPI, 2× I²C, 2× UART
USB	Yes	Yes	USB 2.0 Full-Speed
Radio	+8 dBm Tx - 95 dBm Rx (@1 Mbps)	+3 dBm Tx **-98 dBm Rx** (@1 Mbps)	Even though the PAN1783 has less output power, it has better Rx Sensitivity with better efficiency
Bluetooth	5.3 qualified	**5.4** qualified	PAN1783 is 5.4 qualified
Direction Finding	-	**Yes**	PAN1780 does not support *Continuous Tone Extension*
LE Audio	-	**Yes**	PAN1783 provides a tunable in-chip Audio PLL for better quality (low jitter)
Bluetooth Mesh	Yes	Yes	
Multi Protocol	Thread, Zigbee, ANT Proprietary	Thread, Zigbee, ANT Proprietary	
Security	PSA Certified Level 1 CryptoCell CC310	PSA Certified **Level 2** CryptoCell **CC312**	PAN1783 supports System Protection Unit (SPU), Key Management Unit (KMU)
Slow Clock	32 kHz	-	Internal Slow Clock can be used in PAN1783
Antenna Options (external)	PAN1770	PAN1783A	PAN1783A has bottom PAD vs u.FL connector on PAN1770
Footprint	Same Footprint, Similar Pinout		Major difference related to **QSPI Pins**

PAN1783 – Dual Core Performance and Flexibility

Dual-Core architecture allows for flexible application design

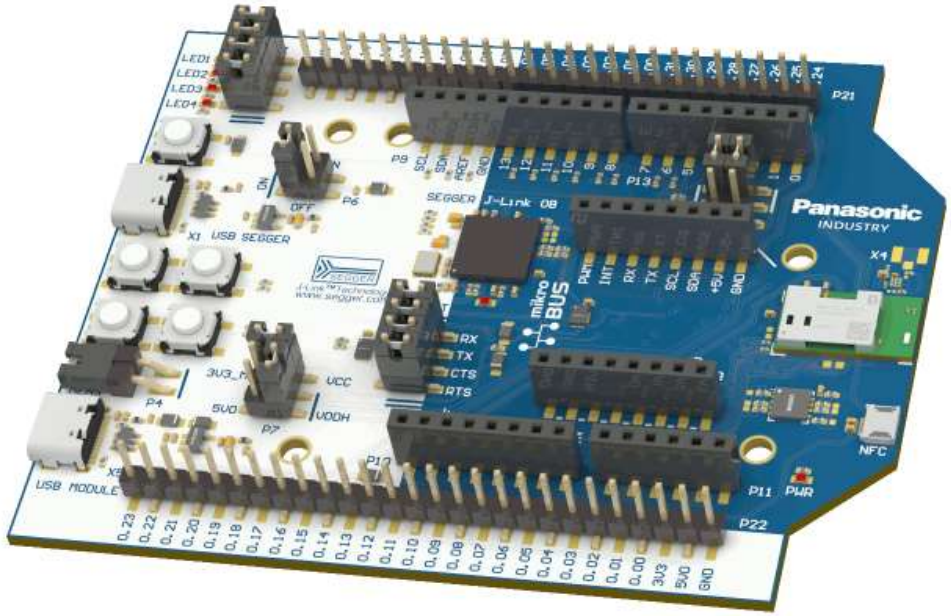


- High-performance application processor, **no need for an external processor**
- Dual-core architecture enabling **flexible software design**
- Enabling **more complex applications**
- Eliminating processor trade-off with regards to **efficiency**
  - highly efficient network processor
  - on-demand high-performance application processor

Development Kits

ENW89860AXKF (PAN1783)

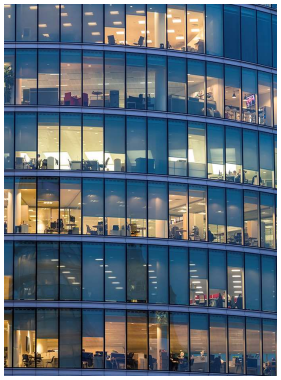
ENW89860CXKF (PAN1783A)



https://pideu.panasonic.de/development-hub/pan1783/

Applications

Vertical Farming



Commercial Lighting

Smart Home

Medical

BLE Audio-Auracast use cases

Hearing Aids (TWS)

Stereo Headphones

Public Address (Broadcast)

Home Theater (Multicast)

Sports Bar TVs (Auracast)

https://www.bluetooth.com/learn-about-bluetooth/recent-enhancements/le-audio/

Thank you!

PAN9019/PAN9019A Module Introduction

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