



CONNECTIVITY CARD NRF52840 MPCIE

Datasheet. Release 1.6

Remote monitoring of critical infrastructure with edge computing

The nRF52 Connectivity Cards from CTHINGS.CO® are extension cards based on the Nordic® Semiconductor nRF52840 SoC. They are multi-protocol chips designed to empower IoT integrators to implement Bluetooth® 5.3 including Bluetooth Low Energy, Bluetooth Mesh, Wirepas®, Thread®, Zigbee®, IEEE 802.15.4, ANT, and other 2.4 GHz protocol stacks.

The extension card allows for full-fledged utilisation of the on-board 32-bit ARM® Cortex™-M4 CPU with FPU. In addition, the ARM TrustZone® CryptoCell cryptographic unit brings an extensive range of cryptography options.

The product comes with full CE class-B and RED certification and can be used to quickly and reliably add 2.4 GHz protocol stack support to any existing device with a **mini-PCIe** slot without worrying about certification or radio performance. A full J-Trace connector is available on a programming jig for convenient firmware development.

CTHINGS.CO also provides various pre-flashing options, including support for DFU bootloader for in-system programming of Zephyr® RTOS applications, and tested support for Wirepas Mesh 2.4 GHz profile.

SPECIFICATIONS

Hardware Features

- Mini PCI-express connector pinout compliant
- Single-ended U.FL antenna connector
- Based on Nordic® Semiconductor nRF52840
- Ultra-low power consumption
- RF output power up to +8 dBm
- ARM® Cortex®-M4 32-bit processor with FPU, 64 MHz
- USB 2.0 full speed (12 Mbps) controller
- Compatible with CTHINGS.CO Programming Jig

Software Features

- DFU bootloader support for in-system programming for Zephyr RTOS applications
- Compatible with Wirepas Mesh 2.4 GHz profile firmware (including sink)
- Compatible with nRF Connect SDK

Electrical Specification

- 3.3 V nominal supply voltage (electrically mini-PCIe compliant)
- 3.0 V - 5.0 V supply voltage range
- ESD protected
- Ultra-low power consumption

RF Interface

- 2360 - 2500 MHz operating frequency
- 1 MHz PLL channel spacing
- ±170 kHz frequency deviation @ 1 Mbps
- ±320 kHz frequency deviation @ 2 Mbps
- 125 - 2000 kbps on-the-air data rate

Embedded Security

- ARM® TrustZone® Cryptocell 310 security subsystem
 - Secure boot ready
 - Secure erase
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SPECIFICATIONS

Certifications The CTHINGS.CO® nRF52 mPCIe 5G Suite Connectivity Card is CE Class-B, Radio Equipment Directive (RED), & EU RoHS directive compliant. US FCC and UK CA certification is planned. The device has been tested to meet the following electromagnetic compatibility standards:

Electromagnetic emissions:

- Conducted emission: EN 55022, EN 55014-1, EN 55011
- Radiated emission up to 6 GHz
- Harmonic current emission: EN 61000-3-2
- Voltage fluctuations and flicker: EN 61000-3-3

Immunity to electromagnetic interference (EMI):

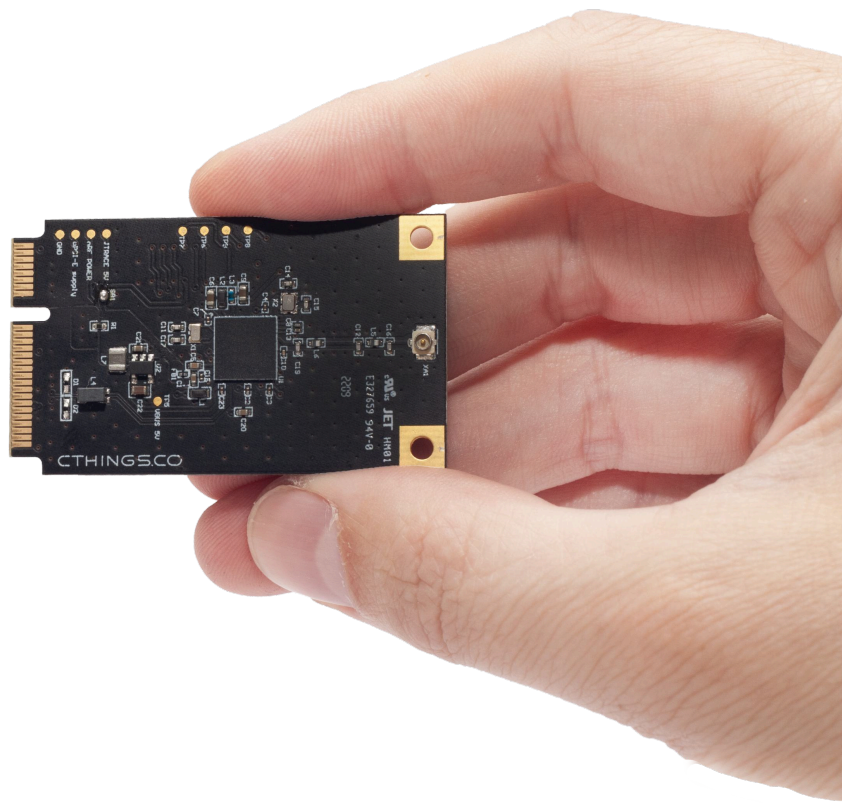
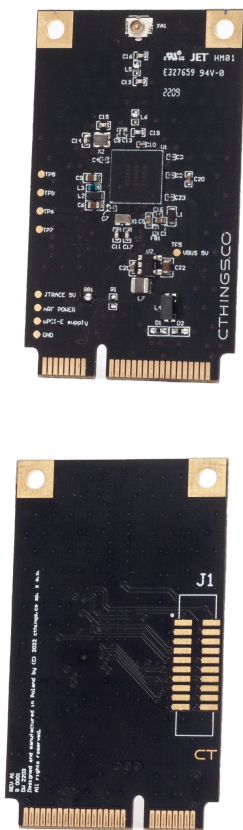
- Electrostatic discharge (ESD) immunity: EN 61000-4-2
- Radiated electromagnetic field immunity: EN 61000-4-3

Use Cases

- IoT Gateways
- Workstations and Laptops
- Cellular backhaul systems for non-cellular Wirepas meshes
- Bluetooth interface for IoT sensors
- Gateways for Nordic® Semiconductor nRF52 based IoT systems

<p>Wirepas Mesh</p>	<p>Plug-and-play support for Wirepas 2.4 GHz profile mesh networks</p>	<p>Mini-PCIe Pinout Compliance</p>	<p>Small and standardised form factor compliant with common hardware</p>
<p>Bluetooth® 5.3</p>	<p>Plug-and-play support for Bluetooth 5.3, 2.4 GHz transceiver</p>	<p>Multiprotocol</p>	<p>Bluetooth Low Energy, Bluetooth Mesh, Thread, Zigbee, ANT, Wirepas</p>
<p>Certified Radio Equipment</p>	<p>Full CE Class-B & Radio Equipment Directive (RED) certification</p>	<p>In-system firmware upgrades</p>	<p>Support for in-system programming with an optional factory-provided DFU bootloader for Zephyr RTOS applications</p>
<p>Performant CPU</p>	<p>32-bit ARM Cortex-M4 CPU with floating-point unit</p>	<p>Zephyr support</p>	<p>Out-of-the-box support for Zephyr RTOS</p>

External appearance



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