

IW610

1x1 Dual-Band Wi-Fi 6 + Bluetooth LE 5.4/802.15.4 Tri-Radio System-on-Chip (SoC)

The IW610 family is a highly integrated single-chip solution that combines 2.4/5 GHz dual-band Wi-Fi 6, Bluetooth Low Energy and 802.15.4 (Thread) in a tri-radio configuration. It is ideal for applications such as smart homes, smart appliances, energy management, industrial automation and gateways.

Supporting both dual-antenna and single-antenna configurations, the IW610 family ensures efficient coexistence between internal radios and external radios like UWB and LTE.

Its Wi-Fi 6 radio provides long-range, reliable connectivity in challenging RF environments, while the Bluetooth LE radio supports a 2 Mbit/s data rate, extended range and enhanced advertising for network commissioning and sensor aggregation. The on-chip 802.15.4 radio supports Thread mesh networking.

The IW610 family is perfect for Matter applications, supporting both Wi-Fi and Thread. The IW610 family can function as a Matter Controller and a Thread Border Router, enabling seamless local and cloud-based control and monitoring across major IoT ecosystems.

Powered by NXP's EdgeLock™ security technology, the IW610 family ensures robust security with secure boot, secure debug, firmware updates, anti-rollback and lifecycle management. Built-in hardware protections, such as a root of trust and cryptography accelerators, safeguard data while maintaining performance, meeting the highest cybersecurity standards for demanding environments.

The IW610 family connects seamlessly to NXP's i.MX MPUs, i.MX RT, and MCX MCUs via secure host interfaces and supports both Linux for i.MX hosts



and FreeRTOS for MCX and i.MX RT MCUs. Its design enables flexible host selection based on product requirements, with low power consumption, tight integration, and secure operation in a compact, cost-effective package.

The IW610 family offers multiple host interface options, SDIO or USB for Wi-Fi, UART or USB for Bluetooth low energy and SPI for 802.15.4.

Wireless modules based on the IW610 are available from leading module manufacturers, providing a ready-to-deploy solution for quick integration.

IW610 Family	Radio Configuration
IW610G	Dual Band Wi-Fi 6 + Bluetooth LE / 802.15.4
IW610F	Dual Band Wi-Fi 6 + Bluetooth LE
IW610C	Single Band Wi-Fi 6 + Bluetooth LE / 802.15.4
IW610B	Single Band Wi-Fi 6 + Bluetooth LE

Feature Overview:

Wi-Fi Key Features

- 1x1 Dual-band 2.4 GHz / 5GHz 802.11 a/b/g/n/ax
- 256 QAM, 20 MHz bandwidth, peak throughput: 114.7Mbps
- Wi-Fi Tx output power up to +23dBm
- Wi-Fi 6 Extended Range (ER), Dual Carrier Modulation (DCM), Target Wait Time (TWT)
- Low-power Wi-Fi idle, standby, and sleep modes
- WPA2/WPA3 security
- Support for Matter over Wi-Fi
- Single, dual antenna with diversity.
- SDIO or USB host interface

Bluetooth LE Key features

- Switchable Bluetooth LE/802.15.4 operation
- Integrated PA/LNA/ Switch with up to +15 dBm TX output
- High speed 2 Mbps, long range, advertising extensions
- UART or USB host interface

802.15.4 radio key features

- IEEE 802.15.4-2015 compliant MAC
- 802.15.4 support for Matter over Thread
- SPI Host Interfaces

Coexistence

- Internal coexistence between Wi-Fi and Bluetooth LE or 802.15.4
- External coexistence for connection to external radio, such as UWB or LTE.

Security

- Hardware root of trust
- Authenticated and secured boot, secure debug
- Hardware cryptography accelerators
- OTP-based secure device configuration and life cycle management
- Cyber security compliant

Available in HVQFN and WLCSP package

- 9 mm x 9 mm, HVQFN, 0.4/0.5 mm pitch 81-pin
- 4.495 mm x 4 mm, WLCSP, 0.33 mm pitch 114-pin

Operating temperatures

- Supply voltage: 3.3 V
- Operating temperature: Industrial -40 to 85°C
- Storage temperature: -55 to 125°C

Modules

- Broad array of module offering from industry leading module manufacturers

Target applications

Industrial

- Building automation and security
- EV charging
- Point of sale (POS) terminals
- HVAC systems
- Environmental monitoring
- Asset management

Smart home

- Home security and surveillance
- Smart doorbell
- Thermostat
- Garage door
- Smart speaker

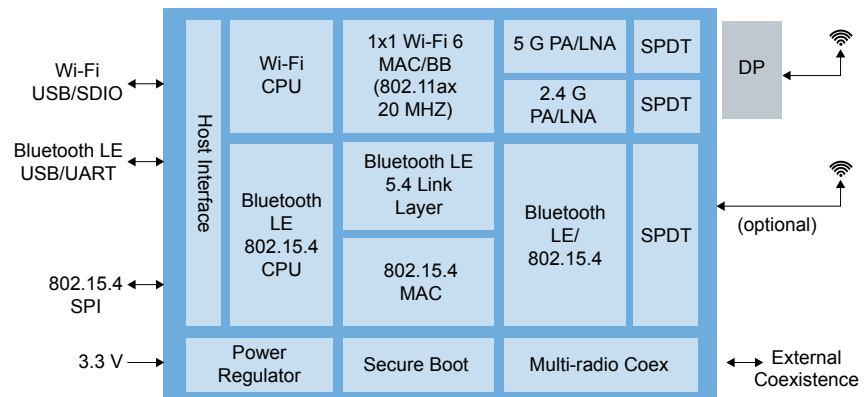
Smart appliances

- Robotic vacuum

Hybrid work

- Printer
- Docking station

IW610 block diagram



Visit www.nxp.com/IW610

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