# Wireless MCU with Integrated Tri-radio: 1x1 Wi-Fi® 6 + Bluetooth® Low Energy 5.4 / 802.15.4

## RW612

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The RW612 is a highly integrated, low-power tri-radio wireless MCU with an integrated MCU and Wi-Fi® 6 + Bluetooth® Low Energy (LE) 5.4 / 802.15.4 radios designed for a broad array of applications, including connected smart home devices, enterprise and industrial automation, smart accessories and smart energy.

The RW612 MCU subsystem includes a 260 MHz Arm® Cortex®-M33 core with Trustzone™-M, 1.2 MB on-chip SRAM and a high-bandwidth Quad SPI interface with an on-the-fly decryption engine for securely accessing off-chip XIP flash.
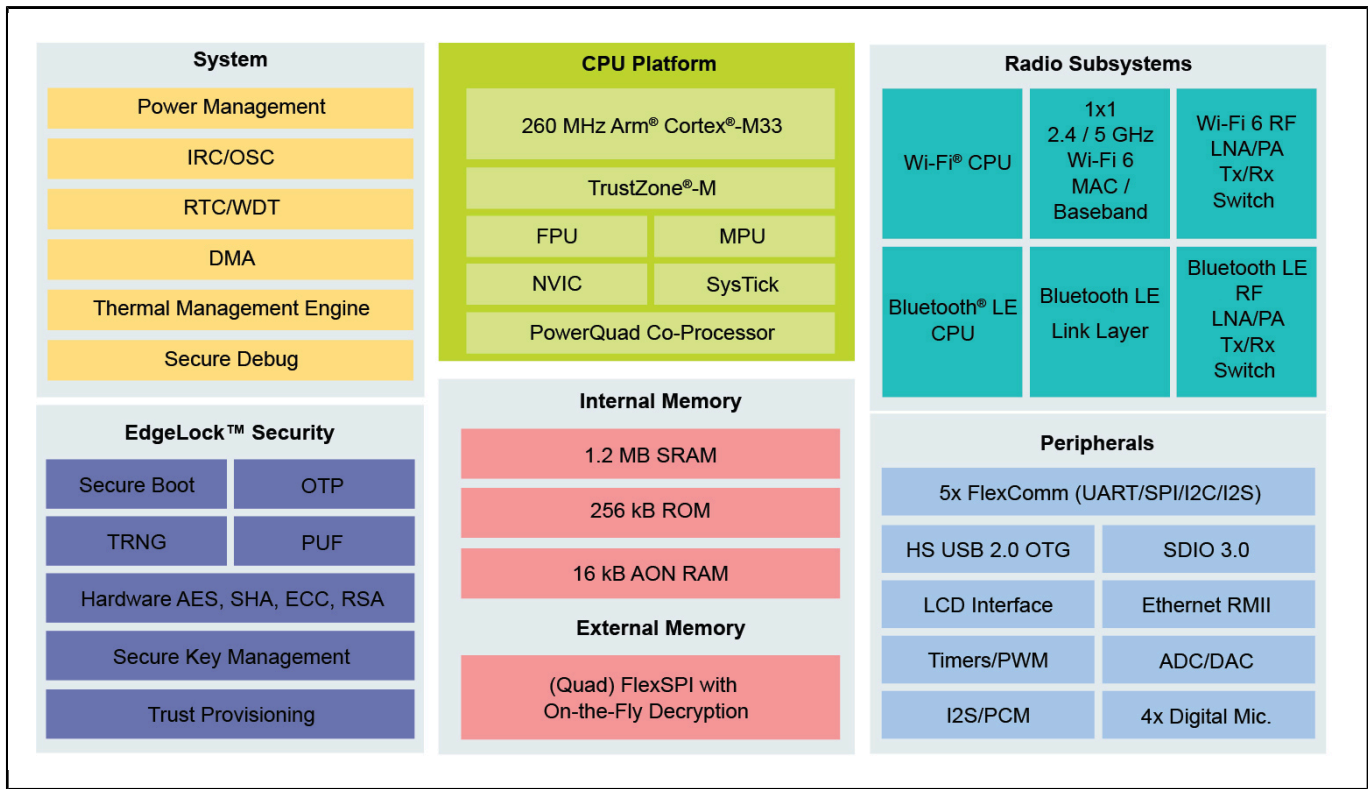
The RW612 includes a full-featured 1x1 dual-band (2.4 GHz/5 GHz) 20 MHz Wi-Fi 6 (802.11ax) subsystem bringing higher throughput, better network efficiency, lower latency and improved range over previous generation Wi-Fi standards. The Bluetooth LE radio supports 2 Mbit/s high-speed data rate, long range and extended advertising. The on-chip 802.15.4 radio can support the latest Thread mesh networking protocol. In addition, the RW612 can support Matter over Wi-Fi or Matter over Thread offering a common, interoperable application layer across ecosystems and products.

EdgeLock® security technology is incorporated, offering secure boot, secure debug, secure firmware updates and secure life cycle management as well as hardware cryptography and physically unclonable function (PUF) for secure key management.
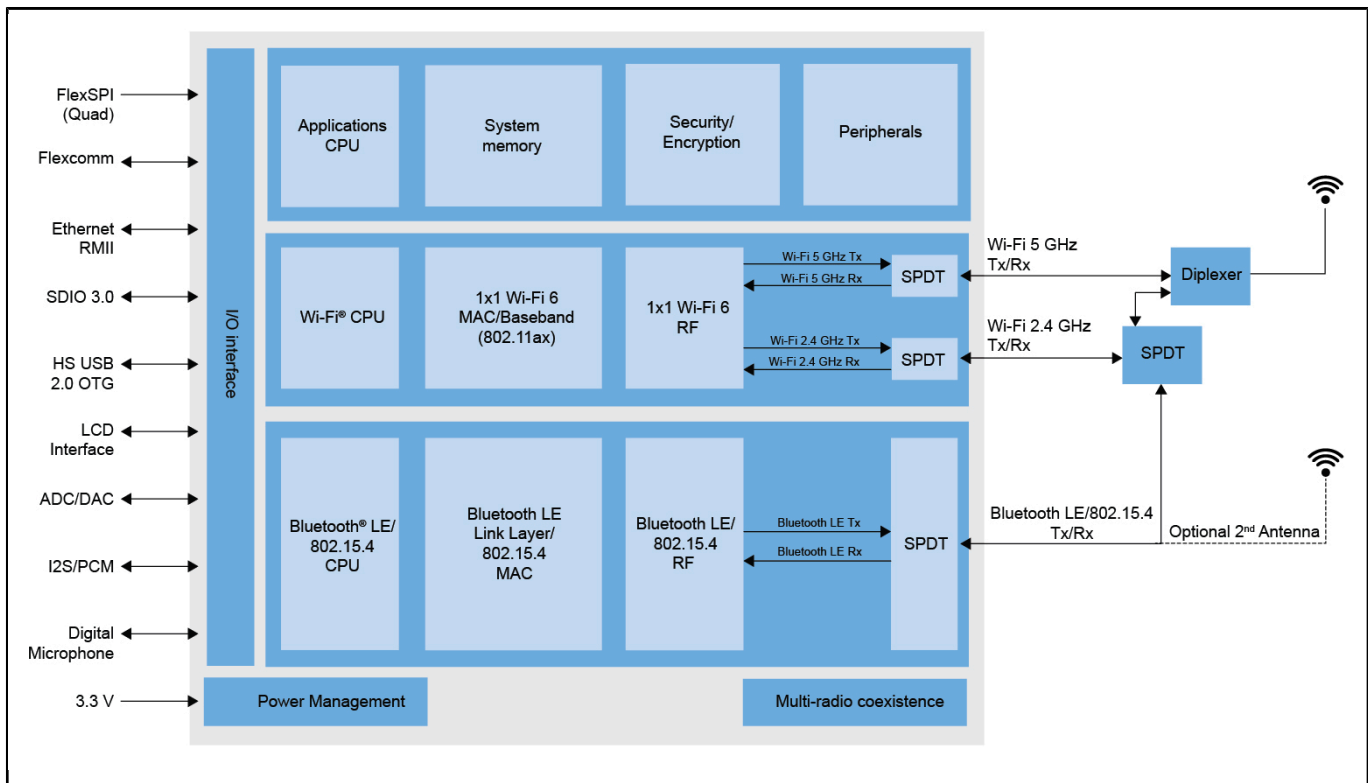
The advanced design of the RW612 delivers tight integration, low power and highly secure operation in a space- and cost-efficient wireless MCU requiring only a single 3.3#V power supply.

Wireless modules based on the NXP RW612 are offered by leading module manufacturers.

# RW612 Main Subsystems Block Diagram

## System
- Power Management
- IRC/OSC
- RTC/WDT
- DMA
- Thermal Management Engine
- Secure Debug

## EdgeLock™ Security
- Secure Boot
- OTP
- TRNG
- PUF
- Hardware AES, SHA, ECC, RSA
- Secure Key Management
- Trust Provisioning

## CPU Platform
- 260 MHz Arm® Cortex®-M33
- TrustZone®-M
- FPU
- MPU
- NVIC
- SysTick
- PowerQuad Co-Processor

## Internal Memory
- 1.2 MB SRAM
- 256 kB ROM
- 16 kB AON RAM

## External Memory
- (Quad) FlexSPI with On-the-Fly Decryption

## Radio Subsystems
- Wi-Fi® CPU
- 1x1 2.4 / 5 GHz Wi-Fi 6 MAC / Baseband
- Wi-Fi 6 RF LNA/PA Tx/Rx Switch
- Bluetooth® LE CPU
- Bluetooth LE Link Layer
- Bluetooth LE RF LNA/PA Tx/Rx Switch

## Peripherals
- 5x FlexComm (UART/SPI/I2C/I2S)
- HS USB 2.0 OTG
- SDIO 3.0
- LCD Interface
- Ethernet RMII
- Timers/PWM
- ADC/DAC
- I2S/PCM
- 4x Digital Mic.

# RW612 Block Diagram Block Diagram

View additional information for Wireless MCU with Integrated Tri-radio: 1x1 Wi-Fi® 6 + Bluetooth® Low Energy 5.4 / 802.15.4.

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