

RW610FML: High-Performance Wi-Fi® 6 and Bluetooth Low Energy Combo Module with Integrated MCU

The [RW610FML](#) is a low-power, high-performance certified Wi-Fi 6 and Bluetooth combo module supporting IEEE 802.11a/b/g/n/ac/ax and Bluetooth® Low Energy (BLE) protocols.

The module integrates embedded memory and an MCU with a rich set of peripheral interfaces, enabling flexible design and broad application support across IoT and consumer devices.

NXP's RW610FML module is based on the RW610, a highly integrated, low-power wireless MCU with an integrated MCU and Wi-Fi 6 + Bluetooth® Low Energy radios. The RW610 MCU subsystem includes a 260 MHz Arm® Cortex®-M33 core with Trustzone™-M, 1.2 MB on-chip SRAM and a high-bandwidth FlexSPI interface with an on-the-fly decryption engine for securely accessing off-chip execute-in-place (XIP) Flash. A second FlexSPI interface is available to connect external PSRAM for memory expansion.

RW610 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.

[EdgeLock®](#) security technology is fully 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.

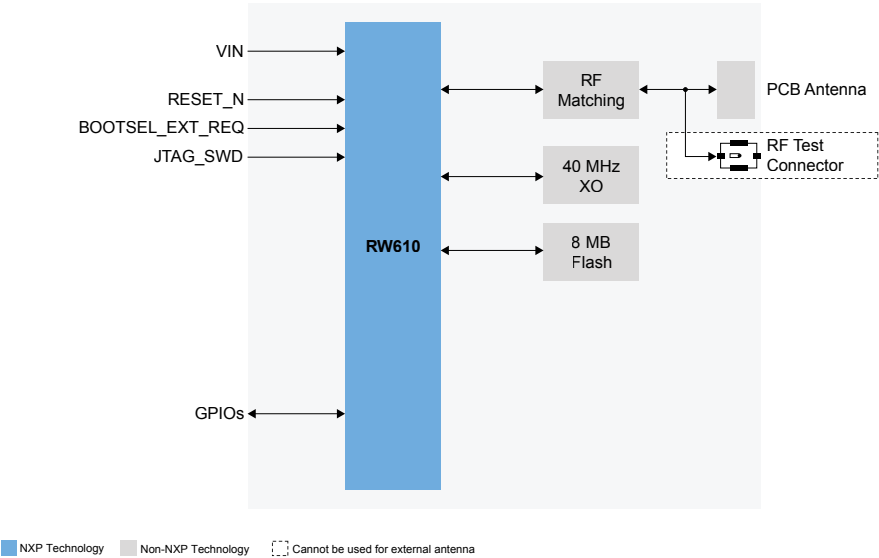
Module key features

- NXP RW610 inside
- 260 MHz Arm Cortex-M33



- Supports IEEE 802.11a/b/g/n/ac/ax specification: Dual band 2.4 GHz and 5 GHz Wi-Fi 6 SISO with 20 MHz channels; up to MCS9 (114 Mbps) peak data rate
- Supports Bluetooth LE features
- 8 MB NOR Flash on module and 1.2 MB embedded SRAM on-chip
- Two FlexSPI interfaces: one for external NOR Flash (XIP) and one for external PSRAM expansion
- GPIO, SDIO 3.0, USB, UART, I2C, SPI, I2S/PCM, SCTimer/PWM, LCD, DMIC, ACOMP, DAC, ADC, UTICK, USIM, WCI-2, PTA, JTAG, SWD, supported via pin multiplexing
- Normal operating temperature range: -40 °C to 85 °C
- Storage temperature: -45 °C to +95 °C
- Dimensions: (25.5 ±0.2) mm × (18 ±0.2) mm × (3.16 ±0.2) mm
- Weight: Approx. 1.51 g
- MSL (storage level): 3
- Surface-mount type

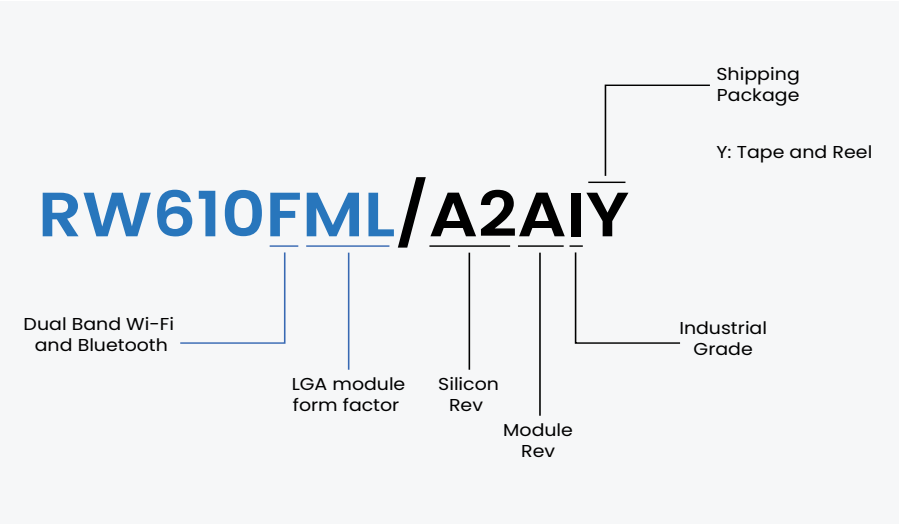
Block diagram



Target applications

- Smart Appliances
- Smart Homes
- Gateways/Hubs
- Industrial Automation
- Electric Charging Stations
- Medical/Healthcare

Part Number Information



RW610FML module



Orderable part number information

Part number	Shipping package	Operating temp.	Antenna #	Antenna type	Module type	Module size (mm)
RW610FML/A2AIY	Tape and reel	-40 °C to 85 °C	1	PCB	SMT	(25.5 ±0.2) × (18 ±0.2) × (3.16 ±0.2)

[nxp.com/RW610FML](https://www.nxp.com/RW610FML)