2x2 Dual-Band (5–7 GHz), 1x1 (2.4 GHz) Concurrent Dual Wi-Fi 6/6E and Bluetooth Combo Solution

IW693

Last Updated: Oct 9, 2025

The IW693 is a highly integrated Wi-Fi 6/6E device enabling concurrent dual Wi-Fi (CDW) and Bluetooth/Bluetooth low energy (LE) operation. IW693 supports four modes:

- Mode 1: CDW 2x2 Wi-Fi 6/6E 5–7 GHz (802.11ax) and 1x1 Wi-Fi 6 2.4 GHz (802.11ax)
- Mode 2: CDW 1x1 Wi-Fi 6/6E 5–7 GHz (802.11ax) and 1x1 Wi-Fi 6 2.4 GHz (802.11ax)
- Mode 3: 2x2 Wi-Fi 6 2.4 GHz (802.11ax)
- Mode 4: 2x2 Wi-Fi 6/6E 5–7 GHz (802.11ax)

The System-on-Chip (SoC) implements advanced features including multiple-user, multiple-input, multiple-output (MU-MIMO), orthogonal frequency-division multiple access (OFDMA), target wake-up time (TWT), and Bluetooth LE Audio. With integrated 2.4 GHz and 5–7 GHz transmit/receive switches (T/R SW), TX power amplifiers (PA), RX low-noise amplifiers (LNA), and a full Bluetooth radio, the IW693 simplifies design. The external front-end module (FEM) with PA and LNA is also supported. The IW693 supports a flexible front-end design with either two or three antennas.

The IW693 implements advanced real-time Wi-Fi and Bluetooth arbitration hardware with software algorithms to optimize coexistence performance. NXP's Edgelock technology is integrated. The embedded security subsystem supports hardware crypto accelerated secure boot, key management firmware authentication, secure life cycle management and antirollback protection. The IW693 integrates dedicated CPUs and memories for both the Wi-Fi and Bluetooth subsystems for real time, independent protocol processing. The interfaces to external host processors include PCIe and SDIO for Wi-Fi and UART for Bluetooth.

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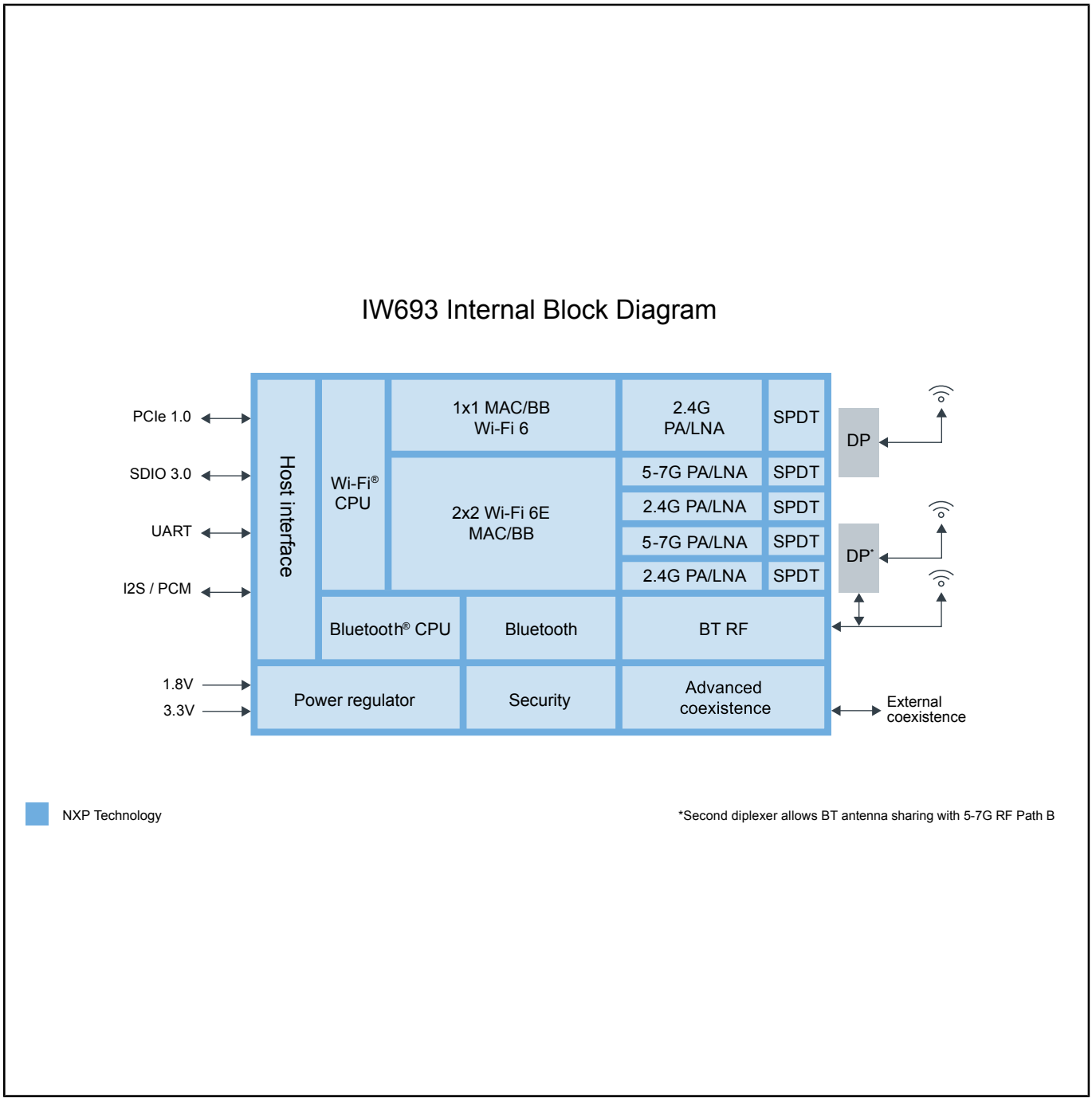
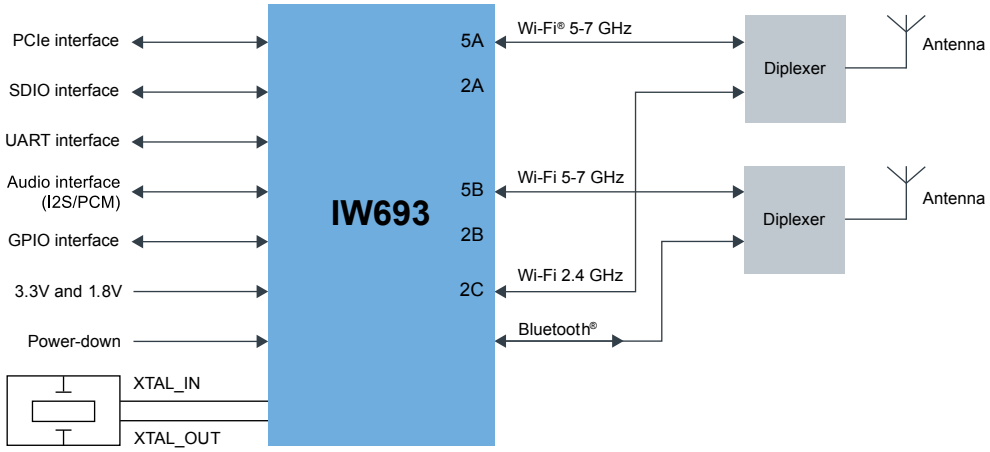
IW693 Internal Block Diagram



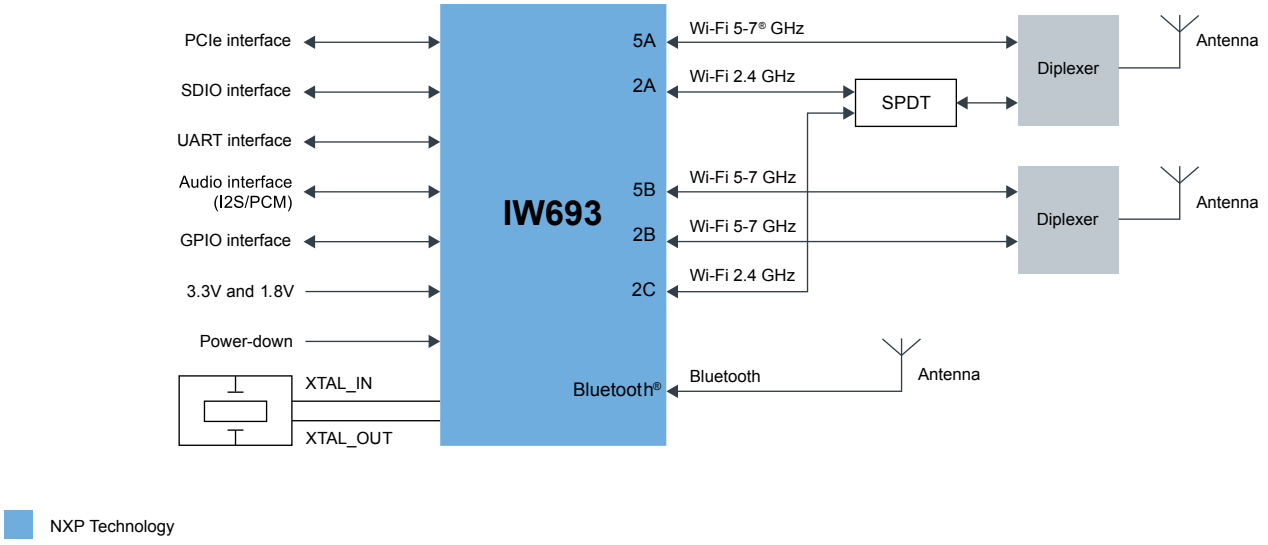
IW693 Application Diagram — Two Antennas Block Diagram

IW693 Application Diagram — Mode 1 and Internal PA/LNA/SW (Two Antennas)



IW693 Application Diagram —Three Antennas Block Diagram

IW693 Application Diagram — Mode 1 and Internal PA/LNA/SW (Three Antennas)



View additional information for 2x2 Dual-Band (5-7 GHz), 1x1 (2.4 GHz) Concurrent Dual Wi-Fi 6/6E and Bluetooth Combo Solution.

Note: The information on this document is subject to change without notice.