Qualcomm

Qualcomm® QCA9377 Wi-Fi/Bluetooth SoC

High performance, low power single-stream 11ac MU-MIMO and Bluetooth 5 in a single-chip solution.

QCA9377 combines advanced 1x1 dual-band 802.11ac MU-MIMO Wi-Fi + Bluetooth 5 in a high performance, low power, small form factor System-on-Chip (SoC).

Designed to deliver superior integration of WLAN and Bluetooth low energy technology in a single-chip solution, the QCA9377 SoC offers both low power dual-band (2.4 & 5GHz), 1-stream (1x1), 802.11ac MU-MIMO and Bluetooth 5.0 technologies.

QCA9377 supports high-speed Wi-Fi connectivity and enriched media experiences for virtually all connected devices and is optimized for energy efficiency, which is critical to extending the battery life of portable devices.

With advanced WLAN/Bluetooth coexistence algorithms, QCA9377 supports superior rate-over-range throughput and low-latency performance in real-world operating conditions.

The QCA9377 SoC is available in three variants:

- QCA9377-3: supports a low-power SDIO 3.0 interface for WLAN and a UART/PCM interface for Bluetooth
- QCA9377-5: Supports a low-power PCIe 2.1 (with L1 sub-state) interfaces for WLAN and a USB 1.1 interface for Bluetooth
- QCA9377-7: supports a low-power USB 2.0 interface for WLAN and a USB 1.1 interface for Bluetooth

Highlights

Advanced 802.11ac combo SoC

Advanced 802.11ac features such as MU-MIMO, Host wake-on-wireless and ARP (Address Resolution Protocol) offloading enable the WLAN link to remain associated for extended periods for additional power savings.

Supports dual-mode Bluetooth 5

QCA9377 supports Bluetooth for Class-1 and Class-2 transmissions without requiring an external power amplifier.

Advanced WLAN/Bluetooth coexistence and concurrent RX

WLAN/Bluetooth coexistence allows for superior rate-over-range throughput and low-latency performance in real-world operating conditions.

Power saving techniques for low power consumption

Both WLAN and Bluetooth power management utilize advanced power saving techniques such as:
- gating clocks to idle or inactive blocks
- voltage scaling
- fast start and settling circuits
- active duty cycles
- processor frequency scaling

87-YB797-1 Rev E

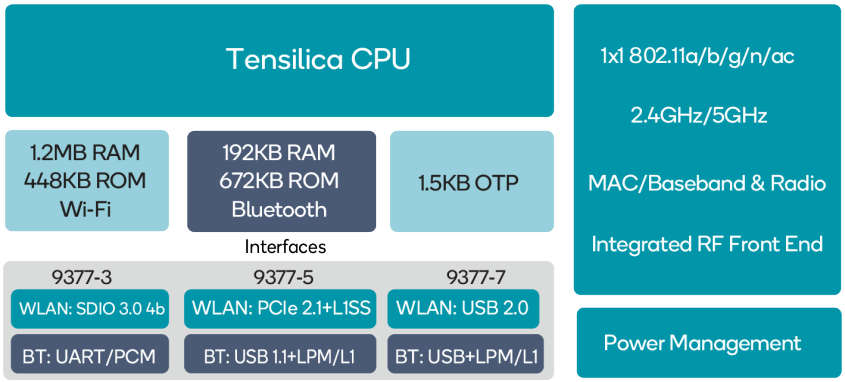
QCA9377 Target Applications

- Internet of Things (IoT)
- Smart Appliances
- Wireless Gaming
- Home Automation
- Industrial Automation
- Infotainment

Features

- 1x1 802.11ac + Bluetooth 5 in a single SoC
- Supports Bluetooth 5, Bluetooth low energy and is backward compatible with Bluetooth 2.x
- Single regulated 3.3V supply operation
- Integrated RF Front End, single ended design
- Offloading for minimal host utilization
- Low-density parity check (LDPC) encoding/decoding
- STBC, MU-MIMO, Transmit Beam-forming
- 1.5KB OTP to eliminate an external flash
- 256-QAM in 2.4GHz
- PCB friendly: mountable on 4L FR4 non-HDI PCB
- Provides a 48MHz reference clock
- 1216KB RAM and 448KB ROM for Wi-Fi
- 192KB RAM and 672KB ROM for Bluetooth

QCA9377 Block Diagram



QCA9377 Specifications

Package	4.32 x 5.46mm, 115-pin WLNSP, 0.566mm pitch
WLAN Technology	1x1 802.11 a/b/g/n/ac with advanced features
Bluetooth Technology	Bluetooth 5.0, Bluetooth LE + HS
PCB Footprint (unshielded)	<110 mm2
Interfaces	**QCA9377-3** WLAN: SDIO 3.0 4b Bluetooth: UART/PCM
	QCA9377-5 WLAN: PCIe 2.1+L1SS Bluetooth: USB 1.1+LPM/L1
	QCA9377-7 WLAN: USB 2.0 Bluetooth: USB+LPM/L1
Antenna Configuration	Single Wi-Fi/Bluetooth antenna
WLAN Channel Bandwidths	20/40/80MHz
WLAN TCP/IP Throughput 80MHz 11ac	USB2.0: up to 260 Mbps SDIO3.0 4b SDR104: up to 330 Mbps PCIe 2.1+L1SS: up to 350 Mbps
Power Supply	Regulated 3.3V

Ordering Information

Product	Part Number
QCA9377-3 SOC	QCA9377-3-115WLNSP
QCA9377-5 SOC	QCA-9377-5-115WLNSP
QCA9377-7 SOC	QCA9377-7-115WLNSP

For additional product information and updates go to: developer.qualcomm.com /get-started/internet-of-things

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