

AR9390

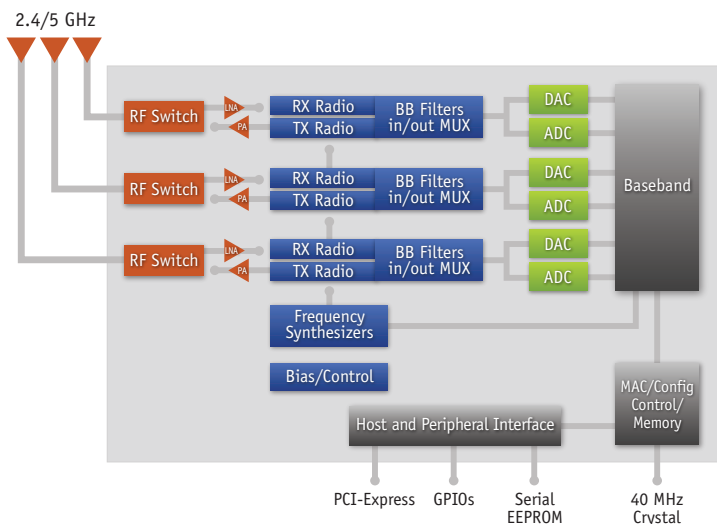
Single-chip, 2.4/5 GHz, 3-stream
802.11a/b/g/n solution with SST3
Technology for Enterprise WLAN



Solution Highlights

- Single-chip, 802.11n-certified WLAN solution with PCIe interface
- Support for 3-stream 11n MIMO
- Conserves power with 1x1 downshift using Dynamic MIMO Power Save
- Enables PHY rates of up to 450 Mbps
- Support for Enterprise WLAN features:
 - Aggregation of 90-byte packets with AES encryption, no minimum AMPDU start
 - 4.9 GHz and 5/10 MHz bandwidth channels for 11j
 - Fast Channel Switch (1 ms within band and 2 ms across bands)
 - Temperature compensation for low power transmission
 - 8-bit resolution for Spectral Analysis
 - Loopback mode for FIPS certification
 - TDOA-based distance measurement and locationing

AR9390 Architecture



Atheros XSPAN® Technology

Atheros offers the industry's most innovative and complete portfolio of 802.11n wireless LAN chip solutions. This generation of Atheros' XSPAN 802.11n technology builds upon the company's XSPAN leadership – with enhanced performance, higher integration, smaller form factors and lower overall cost – to meet the needs of the rapidly growing 802.11n market. Like all Atheros' 11n solutions, the new fourth-generation solutions are compliant to the IEEE 802.11n specification.



Atheros fourth-generation XSPAN chips feature:

- **Leading Integration** that delivers end-product cost and form factors to drive broad market adoption of 802.11n products;
- **Single- and Dual-Band, and Multiple MIMO Configurations** that enable OEMs to balance product price/performance for specific applications and market segment requirements;
- **Rich Media & Peripheral Interfaces** that anticipate the requirements for advanced media networking applications and allow end-product feature differentiation;
- **Easy Network Setup** the industry's simple network configuration software that supports both the PIN and push-button setup methods.

Product Overview

AR9390 is the single-chip, dual-band (2.4/5 GHz), 3-stream 11n solution with PCIe interface. It packs the breakthrough Signal-Sustain Technology 3 (SST3) technology that enhances the rate-over-range (RoR) performance. SST3 is a set of advanced technologies and features enabled by 802.11n including LDPC, TxBF and MLD. The end result is an impressive increase in rate-over-range of ~+100% at short range, ~+50% at mid range and ~+25% at long range.

To reduce the manufacturing cost, the AR9390 has successfully integrated external components such as the 2.4/5 GHz LNA and PA, switching regulators and EEPROMs. It has dramatically reduced the RBOM and has made the board manufacturing easy and simple.

Despite its mighty performance and high degree of integration, AR9390 consumes even less power in every operation mode – active TX, active RX, idle associated and sleep. It conserves energy while providing TCP throughput of more than 300 Mbps when used in 3x3 mode.

AR9390 has many unique features to support enterprise-grade WLAN applications, including full packet rate for 90-byte packets, loopback mode for FIPS certification, 4.9 GHz and 5/10 MHz channels, higher resolution for Spectral Analysis, Fast Channel Switch, and support for TDOA based locationing etc.

An Industrial Temperature (-40° C to 105° C) version of AR9390 is also available for outdoor and warehouse applications.

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Reference Design Highlights



XB114

- Full Mini Card form factor
- External Front End Module (FEM) for increased Tx power
- Compliant with PCI-Express Mini Card 1.1 standard
- Driver support for Windows 7, Vista, XP and Linux
- Worldwide regulatory compliance

AR9390 Specifications

Frequency Band	2.4/5 GHz
Network Standard	802.11a, 802.11b, 802.11g, 802.11n
Modulation Technology	OFDM with BPSK, QPSK, 16 QAM, 64 QAM; DBPSK, DQPSK, CCK
FEC Coding	Convolution Code Low-Density Parity Check (LDPC)
Hardware Encryption	AES, TKIP, WEP
Quality of Service	802.11e
Host Interface	PCI-Express
Peripheral Interface	GPIO
Supported Data Rates	IEEE 802.11a 6 - 54 Mbps IEEE 802.11b 1 - 11 Mbps IEEE 802.11g 6 - 54 Mbps IEEE 802.11n 6.5 - 450 Mbps

Atheros Communications is a global leader in innovative technologies for wireless and wired communications. Atheros combines its wireless and networking systems expertise with high-performance radio frequency (RF), mixed signal and digital semiconductor design skills to provide highly integrated chipsets that are manufactured on low-cost, standard complementary metal-oxide semiconductor (CMOS) processes. Atheros technology is used by a broad base of leading customers, including networking equipment, computing and consumer device manufacturers.

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