

Atheros XSPAN® Technology

Expanding performance. Expanding possibilities.

Atheros offers the most innovative and complete portfolio of 802.11n wireless LAN chipset solutions. The new AR9001 family of chipsets, the second-generation of Atheros' XSPAN 802.11n technology, builds upon the company's first-generation XSPAN products – with enhanced performance, higher integration, smaller form factors and lower overall cost – to meet the needs of the rapidly growing 802.11n market. Like the first-generation XSPAN products, all AR9001 chipsets are compliant to the latest IEEE 802.11n specification.

Atheros' AR9001 chipsets feature:

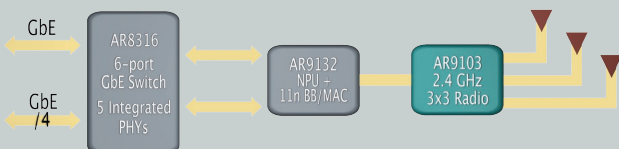
- **Leading Integration** that delivers end product cost and form factors to drive broad market adoption of 802.11n products;
- **Single- and Dual-Band, and Multiple MIMO Configurations** that enable OEMs to tailor product price/performance for specific application and market segment requirements;
- **Rich Media & Peripheral Interfaces** that anticipate the requirements for advanced media networking applications and allow end-product feature differentiation;
- **Simple Setup via Atheros' JumpStart for Wireless**, the company's simple network configuration software which supports both the PIN and push-button setup methods complying to the Wi-Fi Protected Setup specification;
- **Worldwide 5 GHz Full-Spectrum Support** for state-of-the-art regulatory requirements with Atheros' Dynamic Frequency Selection (DFS).

Product Overview

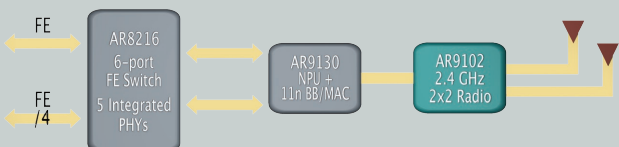
Both the AR9001AP-2NG and AR9001AP-3NG solutions incorporate all of the key components needed to build the most cost-effective, single-band AP/routers for home, carrier/gateway and enterprise applications. These solutions feature the industry's first 802.11n System-on-Chip (SoC), with the high-performance combination of Atheros' 400 MHz wireless network processor (WNPU) and Atheros' market-proven MAC/Baseband. This powerful SoC, which readily supports advanced 11n applications while delivering processing headroom, is paired with Atheros' second-generation, enhanced single-band 2x2 and 3x3 single-chip radios, featuring XSPAN and XSPAN with SST™ performance.

- AR9001AP-2NG: 2x2 MIMO, Fast Ethernet LAN/WAN
- AR9001AP-3NG: 3x3 MIMO, Gigabit Ethernet LAN/WAN

AR9001AP-3NG Architecture



AR9001AP-2NG Architecture



AR9001AP-3NG AR9001AP-2NG

*The industry's highest performance,
single-band 802.11n AP/router solution*



Solution Highlights

- Next-generation, high-performance 802.11n compliant wireless access point and router chipset solutions including:

AR9001AP-2NG

- AR9130: 400 MHz Wireless Network Processing Unit (WNPU), dual-band MAC/Baseband, Fast Ethernet MACs, 2x2 MIMO
- AR9102: Single-band 2x2 MIMO 802.11n Radio

AR9001AP-3NG

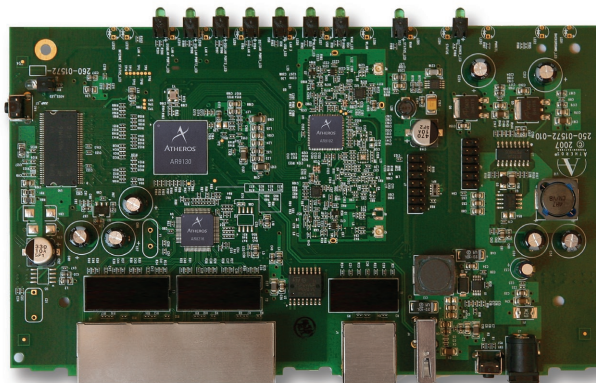
- AR9132: 400 MHz Wireless Network Processing Unit (WNPU), dual-band MAC/Baseband, Gigabit Ethernet MACs, 3x3 MIMO
- AR9103: Single-band 3x3 MIMO 802.11n Radio

- Atheros XSPAN with SST technology – providing the industry's highest TCP/IP throughput at enhanced range
- Support for 2x2 or 3x3 MIMO with spatial multiplexing
- Enables bandwidth of 300 Mbps PHY/link rate – six times the bandwidth of 802.11g or 802.11a
- Three single-band WLAN radios operate at 2.4 GHz
- Compliant with IEEE 802.11b, 802.11g, 802.11d, 802.11e, 802.11h, 802.11i, 802.11n
- Lead-free RoHS compliant

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Reference Design Highlights

- Based on the AR9001AP-2NG chipset, supports 2x2, 2x3, or 3x3 MIMO, Fast Ethernet WAN and LAN connectivity, and access to all WNPUs system interfaces
 - UART, GPIOs
 - USB: support for host or device modes
- Configured for 3x3 MIMO operation for AR9001AP-3NG
- Enables fastest development and evaluation of software, hardware, and other implementation options



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AR9130/AR9132 802.11n Wireless System-on-a-Chip (SoC) for 2.4 WLANs

- AR9130
 - Dual Fast Ethernet MACs
 - 2x2 MIMO
- AR9132
 - Dual Gigabit Ethernet MACs
 - 3x3 MIMO
- 400 MHz MIPS32® processor
 - 64KB I-cache, 32KB D-cache
- DDR memory interface
- Interfaces:
 - USB 2.0: host, device, OTG modes
 - Dual I²S
 - SLIC (PCM)
 - Serial & parallel flash
 - UART, GPIOs

AR9102/AR9103 Single-Band Radios

- AR9102
 - 2x2 MIMO radio/antenna configuration
- AR9103
 - 3x3 MIMO radio/antenna configuration
- 20 and 40 MHz channelization
- Supports spatial multiplexing, cyclic-delay diversity, and maximal ratio combining
- No external VCOs, SAW, or IF filters needed

AR9001AP-3NG and AR9001AP-2NG Specifications

Frequency Band	2.4 GHz
Network Standard	802.11b, 802.11g, 802.11n
Modulation Technology	OFDM with BPSK, QPSK, 16 QAM, 64 QAM; DBPSK, DQPSK, CCK
FEC Coding Rate	1/2, 2/3, 3/4, 5/6
Hardware Encryption	AES, TKIP, WEP
Quality of Service	802.11e
Peripheral Interface	Fast/Gigabit Ethernet, USB 2.0, I ² S, SLIC, UART, GPIOs, LEDs
Memory Interface	DDR, Serial/Parallel Flash
Supported Data Rates	
IEEE 802.11b	1 - 11 Mbps
IEEE 802.11g	6 - 54 Mbps
IEEE 802.11n	6.5 - 300 Mbps

Contact your local Atheros representative and ask about the AR9001 series of semiconductor products or other solutions from Atheros:

Atheros Communications, Inc.
t +1 408.773.5200
f +1 408.773.9940

Atheros Hong Kong Limited
t +852 8206.1131
f +852 8206.1301

Atheros Communications KK-Japan
t +81 3.5501.4100
f +81 3.5501.4129

Atheros (Shanghai) Co., Ltd.
t +86 21.5108.3626
f +86 21.5027.0100

Atheros Communications Intl, LLC-Taiwan
t +886 2.8751.6385
f +886 2.8751.6397

Atheros Korea
t +82 31.786.0428



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AR9001AP-3NG/2NG-6-15-10