



**ATHEROS**  
COMMUNICATIONS

# AR5004X

802.11a/b/g Universal WLAN Solution

*Multi-standard 802.11a/b/g support for universal wireless connectivity to any 802.11 network, future-proofs WLAN deployments and delivers the highest performance.*



## AR5004X Solution Highlights

- Support for IEEE 802.11a, 802.11b, 802.11g
- Universal wireless connectivity for seamless roaming between any 802.11-based network
- Uses digital CMOS technology exclusively, minimizing power consumption and cost while maximizing reliability
- Highly integrated 2-chip set
- 2.4/5 GHz dual band Radio-on-a-Chip (RoC)
- Multiprotocol MAC/baseband processor that supports the RoC
- Wireless Multimedia Enhancements Quality of Service support (QoS)
- Super A/G™ mode delivers 108 Mbps raw data rate and 90 Mbps TCP/IP throughput
- Hardware encryption for the Wi-Fi Protected Access (WPA) and IEEE 802.11i security specifications, provides Advanced Encryption Standard (AES), Temporal Key Integrity Protocol (TKIP) and Wired Equivalent Privacy (WEP) without performance degradation
- Extended tuning range (2.300-2.500 & 4.900-5.850 GHz) for worldwide use
- Dynamic Frequency Selection/Transmit Power Control (DFS/TPC) for international operation
- Support for draft IEEE 802.11e, h, i and j standards
- eXtended Range (XR) technology to give Wi-Fi products twice the range of existing designs
- Wake-on-Wireless™ and Wake-on-Theft™ capabilities to enable remote wireless network management as well as alert of stolen devices
- Power-saving design improvements reduce system power consumption by 60%

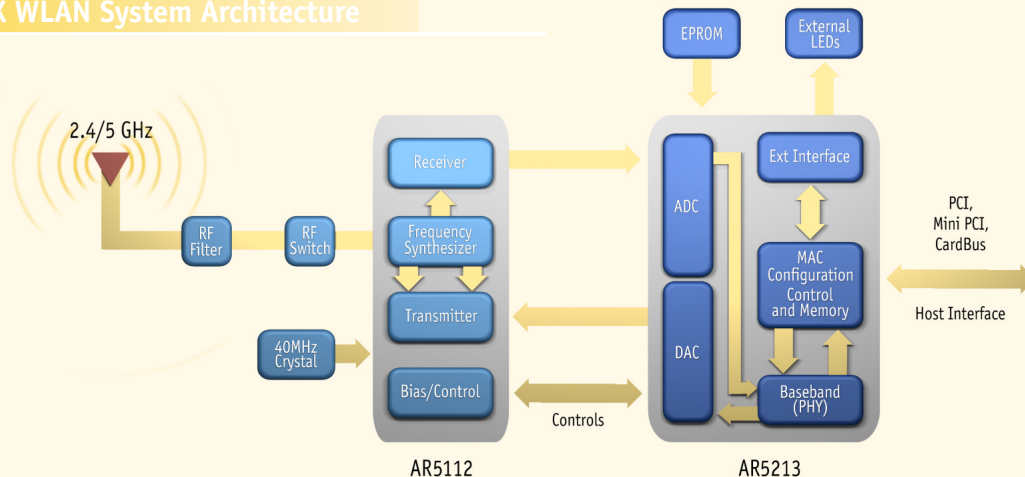
## AR5112 dual band Radio-on-a-Chip

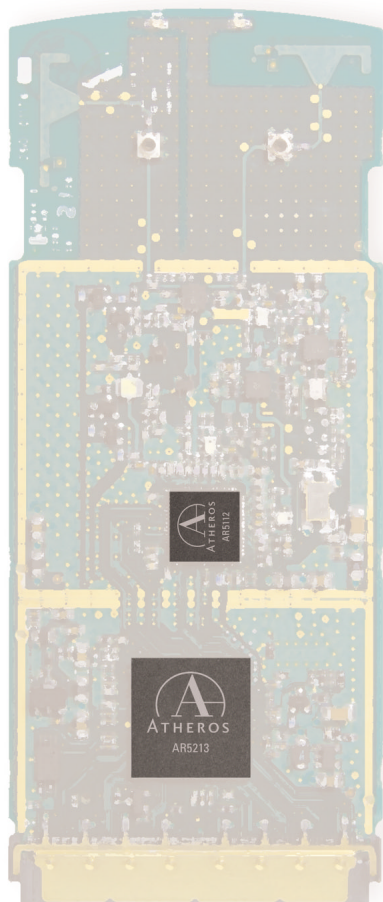
- All CMOS dual band radio chip
- Dynamic IF Dual Conversion architecture provides super-heterodyne performance at Zero IF prices
- Support for IEEE 802.11a, 802.11b, 802.11g
- Operates from 2.300 - 2.500 GHz and 4.900 - 5.850 GHz
- Integrated power amplifier (PA) and low-noise amplifier (LNA)
- External PA and/or LNA can be used for special applications
- Eliminates all IF filters and most RF filters; no external voltage-controlled oscillators (VCOs) or surface acoustic wave (SAW) filters needed
- Increased sensitivity and multipath tolerance
- Enhanced transmit and receive chains

## AR5213 Multiprotocol MAC/baseband processor

- Supports both 2.4 GHz and 5 GHz RoCs
- Super A/G™ mode includes dynamic 108 Mbps capability, real-time hardware data compression, dynamic transmit optimization and standards-compliant bursting
- eXtended Range (XR) technology
- Integrated Wake-on-Wireless™ and Wake-on-Theft™ wireless network management capabilities
- No external FLASH or RAM memory needed
- PCI 2.3 and PC Card 7.1 host interfaces with DMA support
- Integrated analog-to-digital and digital-to-analog converters
- Serial EEPROM, LEDs, GPIOs peripheral interfaces
- Low power operational and sleep modes

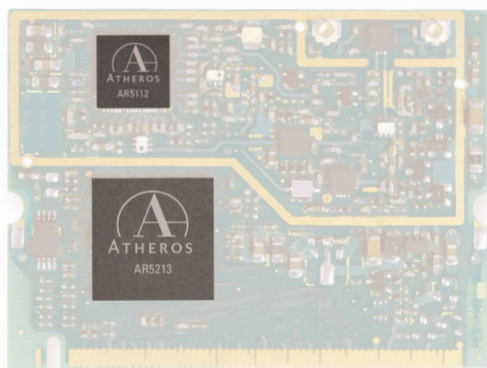
## AR5004X WLAN System Architecture



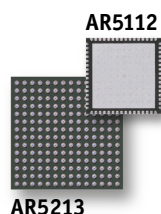


**AR5004X 802.11a/b/g Cardbus Card**

- Windows® drivers for Windows XP, Windows 2000, Windows ME, Windows 98 SE and Windows NT 4.0
- A single driver and firmware code base supports all Atheros chipsets, and provides both backward and forward compatibility with Atheros previous and next-generation multi-standard designs.
- Integrated WPA supplicant supports Windows XP, Windows 2000, Windows ME, Windows 98 SE and Windows NT 4.0
- Client utility supports configuration profiles, current link status, statistics and diagnostics



**AR5004X 802.11a/b/g Mini PCI**



## AR5004X Chipset Specifications

|                        |   |
|------------------------|---|
| Frequency Band         | 4.900 to 5.850 GHz and 2.300 to 2.500 GHz               |
| Network Standard       | 802.11a, 802.11b, 802.11g                               |
| Modulation Technology  | OFDM with BPSK, QPSK, 16 QAM, 64 QAM; DBPSK, DQPSK, CCK |
| FEC Coding Rate        | 1/2, 1/3, 1/4   |
| Hardware Encryption    | AES, TKIP, WEP  |
| Quality of Service     | 802.11e draft   |
| Media Access Technique | CSMA/CA   |
| Host Interface         | Mini PCI, PC Card, PCI                                  |

## Communication Interface

|                      |             |
|----------------------|-------------|
| Peripheral Interface | GPIOs, LEDs |
| Memory Interface     | EEPROM      |

## Supported Data Rates

|  |                |
|--|----------------|
| IEEE 802.11a, 802.11b, and 802.11g Standard Mode | 1 to 54 Mbps   |
| Atheros Super A/G™ Mode                          | Up to 108 Mbps |

## Chip Specifications

|                      | AR5112                           | AR5213                        |
|----------------------|----------------------------------|-------------------------------|
| Operating Voltage    | 2.5V +/-5%<br>3.3V +/-10%        | 1.8V +10%, -5%<br>3.3V +/-10% |
| Packaging Dimensions | 9mm x 9mm                        | 15mm x 15mm                   |
| Package              | 64 Leadless Plastic Chip Carrier | 196 Plastic Ball Grid Array   |